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A Magnificent Transport Achievement

IF proof were wanted that individual ownership coupled with individual initiative and responsibility on the British railways were capable of being adapted to the successful accomplishment of large-scale emergency operations in which all railways and their staffs were required at short notice to work as a team, it was provided in abundance by the operations during the past few days in transporting some 320,000 members of British and French forces evacuated from Flanders. It fell to the lot of the Southern Railway, by reason of its geographical position, to take the initiative in making the arrangements, but all four railways contributed quotas of trains, and this rolling-stock was operated on a pool basis. No fewer than 565 special trains were required between May 27 and June 4, and so short was the notice that this vast traffic had to be directed by telephone without working notices. Moreover, some of the trains had to leave the ports with their destinations unknown. The operating difficulties of this evacuation movement were further intensified by the working during the same period of hundreds of additional special trains for the Forces and various ambulance trains. Another complication was provided by the fact that last Sunday (June 2) saw the movement of nearly 48,000 children in 70 trains from Kentish and other East Coast towns, and 32 of these trains originated on the Southern Railway. It must not be forgotten, moreover, that during the period of intensive B.E.F. evacuation, the British railways also carried some 20,000,000 passengers and over 6,000,000 tons of freight, and that ordinary suburban traffic was practically unaffected. The whole movement constituted a fitting complement to the remarkable work of improvisation involved in conveying the troops from the French coast to British shores, in which naval and mercantile marine vessels collaborated in the smoothest way with large numbers of privately-owned and voluntarily-manned small craft.

* * * *

Engine Cleaning Vindicated

An unexpected light was thrown on the value of locomotive cleanliness during the recent troop movements necessitated by the evacuation of North-Eastern France. The heat and burden of the day, of course, fell upon the Southern Railway, which, although it had to borrow a considerable amount of passenger rolling stock from other companies, managed to provide its own locomotives for most of the trains. Many comments were overheard from the homecoming troops on the cheerful impression imparted by the gleaming bright green engines which headed so many of their trains. Not only was the spirit of the soldiers uplifted by these pleasant sights, but also that of the crowds of the civil population who thronged the railways to cheer the homecomers. Although there were variations in the degree of cleanliness, the general impression was one of a brightness that betokened the pride of those responsible in their machinery. We have always advocated the value of clean and smartly-kept equipment, and the recent experience recounted above seems to vindicate our view. In war, as indeed in any enterprise that requires supreme effort, a high morale is a priceless asset. Anything that will tend towards it is correspondingly to be encouraged.

* * * *

Requisitioned Wagon Compensation

After negotiations which have lasted since the beginning of the war, a settlement has been reached as to the terms of compensation which owners of requisitioned private wagons are to receive. Details of the rates to be paid are given on page 812. In general the basis adopted has been a weekly payment, the amount varying with the age and capacity of the vehicle. A general arrangement has also been agreed as to the undertaking and cost of repairs which may become necessary during the period of requisition. The Government is to undertake maintenance at its own cost but is not to be bound to replace any wagons which may be scrapped. A point of some importance in the agreement is that the Government is to continue to employ the existing private wagon-repairing facilities. The railways are to decide the time and extent of necessary repairs, but the owners of the wagons will not be precluded

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from making claims, on the termination of the requisition period, in respect of any deferred maintenance and repairs. It is also stipulated that duplicate specifications of all repairs other than those for out-station repairs will be sent to the owners of the wagons by the repairers. In the case of extensive repairs becoming necessary, involving a decision as to whether the wagon might not more economically be discarded, special provisions have been made for consultation between the railways and the owners.

* * * *

Dumb-Buffer Wagons on British Railways

In the early years of the present century large numbers of wagons with dumb or dead buffers, *i.e.* buffers without springs, were running on the railways of Great Britain, many owned by the railway companies themselves and many by private owners. The lack of flexibility of trains composed of such vehicles, especially on curves, was a source of danger from derailment, in addition to which with loose couplings damage to goods in transit and even to the wagons themselves was liable to occur upon the sudden application of the brake on the locomotive. The railway companies therefore decided to prohibit the use of such wagons, and a circular was issued by the Railway Clearing House dated May 19, 1903, laying down December 31, 1909, as the date after which no such wagons should be permitted to run. It was subsequently decided to put forward the date to December 31, 1913, and a new R.C.H. specification for spring-buffer 8, 10, and 12 ton wagons was issued in December, 1904, so that there should be ample time in which to carry out the necessary replacements.

* * * *

Great Northern Railway, U.S.A.

This company owns and operates 8,072 miles of line in the Western District of United States Railways. The system extends from St. Paul and Duluth to Seattle, Vancouver B.C., and Bieber, Calif. It controls (jointly with the Northern Pacific) the Chicago, Burlington & Quincy (8,973 miles) and the Spokane, Portland & Seattle (948 miles). Freight revenues in 1939 increased by 16·7 per cent., but passenger revenues decreased by 4·3 per cent. in comparison with 1938.

	1938	1939
Passengers	1,146,447	1,083,607
Freight, tons	23,264,183	32,821,757
Freight, ton-miles	7,017,295,740	8,701,383,343
Average haul, miles	301·64	265·11
Operating ratio, per cent.	68·8	65·9
	$	$
Passenger revenue	4,544,244	4,350,571
Freight revenue	68,544,001	80,001,678
Railway operating revenues	79,215,531	91,783,373
Operating expenses	54,517,108	60,462,670
Net railway operating income	14,479,276	19,584,595

The income balance transferred to profit and loss in 1939 was $8,408,425, against $2,683,756 in 1938.

* * * *

Machine Tool Census

Throughout this week a census has been taken of the hours during which machine tools in the engineering and allied industries of this country have been operated. At the instigation of the Production Council, the Ministry of Supply circulated forms to all works owning or operating machine tools and these are being used for the compilation of the required particulars. The object of the census is to enable plans to be prepared aiming at the elimination of idle periods for these essential machines and so to aid the speed-up of the national production of arms. In the present war, which is based so largely on the products of the engineer's skill, the importance of machine tools and their utilisation cannot be over-rated. The high degree of precision which has been developed in these tools in recent years has earned their designers well-deserved tributes in many parts of the world for their resourcefulness and constant progress. The products of British machine tools are second to none in their variety, quality, and high degree of finish. For purposes of the war it will probably be necessary to concentrate largely on the production of great numbers of certain items of military equipment which will be judged rather by their speed of output and ability to do their job than by a perfection of finished appearance.

* * * *

Holidays Discouraged by Government

The implications of the Government's appeal for a general abandonment of the annual holiday for the duration of the war are far greater than the direct effect on the increase of national production and more particularly the armament trades output. There is no doubt that there will be a very widespread response to the appeal and that in consequence transport undertakings and holiday resorts, to take two obvious examples, will have to modify their plans considerably. So far as the railways are concerned the decision to avoid or curtail the vast masses of pleasure seekers which usually have to be transported during the summer months, more particularly in August, will come as a welcome relief at a time when the lines are already severely burdened with abnormal traffic arising from the war. It will be recalled that during the war of 1914-19 efforts were made to discourage pleasure travel by appeals to the public, by increasing passenger fares, and later by giving effect to restrictions on non-essential travel. On this occasion it would seem likely that the desired effect will be achieved by the more practical and productive method of keeping people at work. By arranging long week-ends and other rest periods for staffs on a system of rosters, it will be possible to keep in constant operation all the essential units in industry; at the same time some progress may be made in the education of the public to the idea of staggered holidays which the railways have long advocated.

* * * *

Australian Railway Gauges

The different gauges of the Government railways in the various Australian States, and the route mileage of each, are shown in a statement published in the annual report of the Commonwealth Railways Administration, on which the following table is based:—

	5 ft. 3 in.	4 ft. 8½ in.	3 ft. 6 in.	2 ft. 6 in.	2 ft.	Totals
Queensland	—	69	6,467	—	30	6,566
New South Wales	—	6,114	—	—	—	6,114
Victoria	4,651	—	—	122	—	4,773
South Australia	1,480	—	1,078	—	—	2,558
Western Australia	—	—	4,377	—	—	4,377
Commonwealth	—	1,113	1,088	—	—	2,201
Tasmania	—	—	647	—	—	647
Totals	6,131	7,296	13,657	122	30	27,236

The standard gauge mileage in Queensland forms part of the Grafton-Kyogle-South Brisbane Railway. The 5 ft. 3 in. Victorian system includes 255 miles in New South Wales territory, of which 13·8 miles are still being worked by the Railway Construction Branch. The South Australia system includes 1¼ miles of mixed 5 ft. 3 in. and 3 ft. 6 in. gauge. The Commonwealth Railways system includes 4 miles of mixed 4 ft. 8½ in. and 3 ft. 6 in. gauge.

* * * *

Rational Locomotive Working

To anyone who made a study of British express train operation during the years that elapsed between the war of 1914-19 and the present conflict, numerous anomalies will readily come to mind. There were cases where time-

tables and train loadings called for harder work than could be performed by the most powerful locomotives available; in other localities the reverse conditions prevailed; unnecessarily light loading limits were to be found, and there appeared to be a lack of co-ordination between the planners of timetables and those best able to judge locomotive capacity. Towards the end of this period a series of dynamometer car trials on the L.M.S.R. was followed by an extensive alteration to the timetables over certain sections of that railway, in which the revised schedules were based directly upon data obtained in the locomotive trials. The results were most successful. The analysis published elsewhere in this issue, of work performed under varying traffic conditions, takes the process a stage further, and embodies a record of the performance of the majority of modern British express locomotive types taken collectively, and grouped in six classes of gradually mounting haulage capacity, from modern superheated 4-4-0s up to the latest streamlined Pacifics. As a summary of work done in ordinary day-to-day service it could form a sound basis of locomotive ability on which to build up an efficient train service.

* * * *

Extra Carrying Wheels

The employment of what are sometimes referred to as extra carrying wheels in the design of a locomotive has the effect of extending the wheelbase, and this in its turn generally means larger turntables and the transference of weight from the coupled wheels with consequent reduction in the proportion available for adhesion. On the other hand an additional pair of wheels at the trailing end relieves the designer of one of his problems, *i.e.*, that of scheming a suitably large firebox and grate area, as all the coupled axles are grouped in front of the firebox, thus obviating the need of having to fit the latter in between two of them; at the same time an excessive length of rod can be avoided. Wide fireboxes and shallow grates may be used to overcome the difficulty to some extent, but when it is desired to employ a deep firebox extending between the frames, as is for the most part preferred, the extra pair of uncoupled wheels comes in very useful and permits of a suitable distribution of the weight of the engine, making possible the use of a larger boiler and firebox and leaving an ample proportion for adhesion.

* * * *

Adverse Views of Sloping Firegrates

Our American contemporary, the *Railway Mechanical Engineer*, in its March issue asks why sloping grates in locomotive fireboxes should be perpetuated in modern practice. This detail, according to our contemporary, has apparently outlived the conditions which justified its introduction, and the opinions held by the vice-president of a firm manufacturing mechanical stoking apparatus are cited as supporting the same point of view. This opinion, expressed at a convention of the Railway Fuel & Travelling Engineers Association, called attention to the detrimental effect that the sloping of the grate has on the fire bed, particularly in locomotives engaged in high-speed service. The vibrations in these engines, it was contended, result in the fire bed creeping forward and building up a heavy fire at the forward end and a thin one at the rear of the firebox. These conditions prevent the admission of sufficient air at the front to support combustion while admitting too much at the rear, thereby reducing the effective grate area by the amount covered by the heavy fire. It has been proved that seemingly unimportant details of design have a marked influence on locomotive efficiency and there appears to be no justification for the retention of sloping grates, whilst certain clear advantages attend the use of horizontal grates.

Nationalisation in Transport

EVEN before the drastic powers of control and direction of industry which were assumed by the Government as the result of the speedy passage through Parliament of the Emergency Powers (Extension) Act, the increasing intervention of Whitehall in the direction of trade had revived speculations as to the likelihood of nationalisation of some of our major industries after the war. Two great arms of transport, railways and shipping, have naturally figured in these conjectures, for they have attracted a wide measure of Governmental attention because of their indispensability in the conduct of the national life and the prosecution of the war. In the recent past we have on more than one occasion referred to the suggestions which have found favour in some quarters that the railways will emerge from the present conflict in at least a greater measure of unity of control than existed before the Minister of Transport exercised his powers to conscript the lines in those days of rapid change which immediately preceded the declaration of war last September. The probability cannot be denied that, just as after the war of 1914-1919 it was decided that the present four group railway companies should replace the 120 undertakings which then existed, so when the present struggle is over changes may be made in our transport organisation. Indeed, it would be a disaster, both for the nation and for the various agencies of transport, if opportunity were not taken to weld into a more harmonious whole the various functions of the several systems, rail, road, coastwise shipping, and civil aviation, which in the past have been the subject of many inquiries and reports but little effective co-ordinating action by the central authority.

What form that action might take it is as yet far too early to foresee, but it is at least apparent that it does not necessarily imply strict nationalisation of all or any of the transport agencies. There is good reason to believe, indeed, that a nationalisation policy which applied only to one or two of these agencies to the exclusion of the remainder, would leave unfinished an essential element in the success of a national transport plan, the true division of function of all sections of the industry. On the other hand, a wholesale nationalisation on the vast scale necessary to bring within its scope all forms of transport would be an undertaking before which any administration might well hesitate. It is far more likely, therefore, that means will be adopted to secure co-ordination which will not involve nationalisation, although it may well be that the various operating units in the industry will have to be welded into larger and more compact bodies if the general scheme is to hold promise of success. Between developments of this kind—of which the railway industry in its present form, and to a greater extent, the London Passenger Transport Board, are examples—which may in large part be regarded as normal in the history of large industries, and the passing to the permanent control of Government Departments, there is a great gulf. There is, too, all the difference between State-owned enterprises, run by conscientious, painstaking, but not always severely practical Civil Servants whose lack of commercial success can be met by a charge on the general community, and private industrial undertakings which in good times contribute largely to the national Exchequer and in bad years bear their own losses.

When Sir John Latta presided at the annual general meeting of the Nitrate Producers' Steamship Co. Ltd. on May 30, he dealt with this problem of the future, more particularly from the viewpoint of a shipowner, although in large part his remarks would apply equally to other forms of transport. He said: "Some people are afraid that these emergency control operations may result in nationalisation. Personally I am not afraid of that. There-

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is very definite evidence extant that every nation that has endeavoured to cheapen or expand its transportation trade under nationalisation has failed in the attempt and has incurred colossal financial losses. Promiscuous trade which the individual shipowner can create by enterprise and intuition are not workable under stereotyped Government regulations. The pre-eminence of British world shipping has in the past been due almost entirely to the enterprise and initiative of the private operator. Since, therefore, private interests can unquestionably provide the community with the most efficient service at the lowest cost, there should be no fear whatever of nationalisation."

Lord Stamp dealt equally bluntly with nationalisation, as it might apply to railways, at the annual meeting of the L.M.S.R. He declared that he did not believe the railways could be run efficiently from Whitehall, and added: "The genius of our nationalising enthusiasts is confident of miracles of achievement in peacetime through secrets of vitality in administration which seem so far to have eluded their colleagues abroad. I am not going to gainsay these, but I am quite clear that each railway at present has its own tradition of action and scheme of related responsibility, along which its best current results can be achieved. . . . There is much more in the running of a railway than the cold giving of orders and the correct obeying of them. The danger that I personally desire to guard against is that in the local officer the stream of instructions from the centre . . . shall not bring about a blunting of initiative, and induce a lack of responsibility for, and interest in, commercial results. . . . I personally see no sign of it, but it can only be avoided by the vigilant preservation of *esprit de corps* and mutual interest as between headquarter's management and the furthest stretches of the line. For this reason, the less the Government try to stamp ready-made uniformities of procedure upon the railway organisation, and the more they can leave of day-to-day affairs to the accustomed and responsible personnel, the more likely they are to ensure against this risk."

* * * *

Comprehensive Research in India

PROBABLY the most striking features of the report by the Indian Pacific Locomotive Committee, published last July and dealt with in a summary in our issue of July 7, and in leading articles in our issues of July 7 and August 4, 1939, were its extraordinary detail and comprehensiveness, as well as the soundness of its recommendations. It is hardly surprising, therefore, that the Railway Board has entered into the spirit of the report and acted upon its recommendations with equal zeal and in similar detail, as is obvious from the board's 15-page printed statement, extracts from which will be found on page 815 in this issue. What, however, is of greater importance is the fact that this statement signifies an almost complete acceptance of the committee's recommendations, a matter on which its indefatigable chairman and members are to be congratulated. At the same time, it should be remembered that the report stressed the fact that certain of the committee's recommendations were subject to the results of various experiments which are now being carried out, and it is still uncertain whether the results of these experiments confirm the recommendations in all instances.

It is satisfactory that the Railway Board has, with the concurrence of the Senior Government Inspectors and railway administrations concerned, permitted a reversion to the 60-m.p.h. general speed limit for the heavy "XC" Pacifics on the North Western and Bombay, Baroda & Central India Railways, instead of the all-India 45-mile restriction formerly imposed on all "X" type engines after the Bihta derailment. A further piece of good news is the board's acceptance of the recommendation that all mail and passenger engines in India should be fitted with speed indicators, even though there is no mention of speed-recording apparatus.

The additional research work being carried out by the Central Standards Office, over and above the tests recommended by the committee, is of considerable interest. It includes tests to amplify tables for safe loads and speeds and to gauge the effect of density of traffic on the "running down" of the track. The effect of rainfall on lateral strength and maintenance of track, and the variation of elastic track constant under differing vertical loads and sleeper spacings are also the subject of research. Investigations with vehicles embrace tests with strain gauges on spring hangers to determine variation in sprung axle load under running conditions for compensated and non-compensated springing, as well as a study of the influence of underhung or overhung springs, and of vehicular characteristics of various types. With regard to permanent way, investigation is being carried out into the distribution of both contact and fillet stresses in rails near the point of application of load, into the speed effect due to frequencies of sleeper spacing, and the improvement in rail stress conditions resulting from closer sleepering; fishplate stress measurements are also being recorded by using a larger number of strain gauges.

Another important line this research is taking is in the recording of facts regarding various types of sleeper on different kinds of formation and ballast. The pressure distribution on different subsoils under various types of sleeper is being examined, and the lateral strength of pot and plate type metal sleepers with loosely fitting cotters is being compared with that of rigid types of sleeper; tests with creosoted softwood sleepers are also being made. Measurements are being recorded of the stability of track formations, taking simultaneous readings of vertical and lateral loads. The best methods of ballasting on various soils are being studied, and the use of shovel packing is being tested. Other matters receiving attention are the use of sand ballast, the sampling and testing of soils, the extent of porosity under varying pressures, and the time factor in settlement. From these notes it will be clear that this Indian research work is covering a wide field of investigation, and, thanks to the scientific methods employed, it should provide much valuable information.

Not the least interesting items in the Railway Board's statement are those relating to the Government inspectorate; relationship between the board, the railways, and the consulting engineers; and the detailed procedure for the design and supply of new types of engine. In commenting (in our issue of May 10 last) upon the separation of the railway inspectorate cadre from that of the State Railways, we might have mentioned that this reform was referred to at considerable length in the Pacific Locomotive Committee's Report, para. 210, and its suggestions and recommendations have presumably influenced the decision to give early effect to the Government of India Act in this respect.

Similarly, it seems likely that regard was paid to the committee's remarks, para. 221, in connection with the subsequent report, to which we referred in our issue of May 3, regarding the future construction of broad-gauge locomotives in India. It should be pointed out, however, that the Pacific Locomotive Committee confined its remarks on this subject to suggesting that a prudent course would be to build engines in India of simple types which have already been tried out; clearly it did not envisage utilising, as a commencement, more than an existing repair

shop—the committee instanced Jamalpur as suitable for additional equipment—for extending to a few broad-gauge engines the metre-gauge practice pursued at Ajmer of manufacturing and assembling parts. In this way, the necessary technical and works personnel could gradually be trained to undertake both design and construction as the industry develops.

* * * *

Antofagasta (Chili) & Bolivia Railway Co. Ltd.

THE owned and operated lines of this company, which has two separate administrations, one at Antofagasta covering the lines in Chile, and one at La Paz dealing with the Bolivian lines, also provide connections with Argentina and Peru. The railways throughout are of metre gauge. A system of waterworks is also part of the company's undertaking. Among the railways operated are the Aguas Blancas, the Chilian Northern Longitudinal, and the Bolivia, but the receipts and expenses of these lines are not included in the company's revenue account. As shown by the report for the year 1939, gross receipts of the whole undertaking amounted to £727,700, a decrease of £23,174 or 3·09 per cent. in comparison with 1938, and the working expenses of £595,884 showed an increase of £37,050 or 6·63 per cent., so that the net receipts of £131,816 were £60,224 lower. An increase from £100,000 to £167,500 is shown in the dividend receivable from the Andes Trust Limited, but the net income of £10,797 from the Bolivia Railway bonds was £5,859 lower. Debenture interest was fully covered and the amount to be provided in connection with the lease of the Aguas Blancas Railway was reduced from £60,008 to £15,414. From the operation of this railway there was a profit of £11,426 in 1939, against a loss of £1,069 in 1938. The accompanying table compares the financial position of the past two years:—

	1938	1939
	£	£
Railway gross receipts	715,123	687,469
Railway working expenses	523,583	561,776
Railway net receipts	191,540	125,693
Total income	487,661	463,530
Debenture interest, rentals, etc. ...	290,456	280,022
Exchange	38,425	7,010
Preference dividend arrears	30,000	—
Carried forward	128,780	176,498

Compared with 1938, there was an increase in the total tonnage of goods traffic handled, an improvement mainly in items of down traffic, traffics in copper and other low grade ores from stations on the Chilean section. Most items of up traffics gave decreases, notably mining articles, coal, and fuel oil, but increases were recorded in local traffic in Bolivia in general merchandise, cereals, and sugar. Passenger numbers and receipts improved in Bolivia but fell off in Chile. To compensate for the general increases in salaries and wages decreed by the Bolivian Government in October last, the company was authorised as from November 3 last to increase Bolivian tariffs by a scale of surcharges varying from 2 per cent. to 22·4 per cent. The causes of the increase in railway working expenses were the larger contributions to renewals accounts, increases in salaries and wages, higher prices for fuel and materials, and the effect on all currency expenditure in Chile by reason of the rise in the sterling value of the peso. Net receipts from the waterworks undertaking were £6,123, against £500. This improvement was due largely to the rise in the sterling value of the peso and to increased sales of water in Antofagasta. Expenditure during 1939 on capital account amounting to £13,051, was mainly in respect of a new engine shed at La Paz and a power unit for a diesel coach to be used in experimenting with that type of traction under the varying conditions of altitude in Bolivia.

LETTERS TO THE EDITOR

(*The Editor is not responsible for the opinions of correspondents*)

Early Railway Speeds

60A, Green Lane, Northwood
June 3

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Some readers of your interesting editorial of May 31 on "Early Railway Speeds" may like to have a note of two other papers, published years ago, dealing with the subject. One was "Facts bearing on the progress of the railway system," by Wyndham Harding, read at a meeting of the British Association at Swansea and published in the Statistical Society's Journal, 1848, Vol. XI. The tables compare average speeds of 1843 with 1848.

The other was "English Express Trains in 1871 and a comparison between them and those of 1883," by H. B. Willock (Lieut., R.E.), read before the Statistical Society and published in the Society's Journal of June, 1884, Vol. 47, Part II.

Although Wyndham Harding, in his paper of 1848 wrote "an English public will always feel an interest in anything like a race, and we accordingly find the different rates of express trains a common subject of interest," I agree with you that it was not until E. Foxwell and T. C. (later Lord) Farrer wrote in the early '80's that public interest was really aroused.

Yours faithfully,

REGINALD B. FELLOWS

Privately-Owned Tank Wagons

88, Gloucester Place,
London, W.1
May 30

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In THE RAILWAY GAZETTE of May 3 you published a letter from me giving a list of the number of tank railway wagons owned by the various Roumanian oil companies at the end of 1938. Your readers may be interested in the following table I have compiled of the privately-owned tank wagons in Belgium, Canada, Italy, and the U.S.A.:—

Belgium	Redeventza S.A.	25 cars
	Belgian Gulf Oil Co.	143 cars
	Tankwagon S.A.	563 tons capacity cars
Canada	Imperial Oil Co. Ltd.	2,500
Italy	A.G.I.P.	1,150
	Petrolifera Italiana S.A.	10
U.S.A.	Cities Service Co.	3,121
	Continental Oil Co.	1,949
	Crown Central Petroleum Corp.	131
	Mid-Continent Petroleum Corp.	2,147
	Phillips Petroleum Co.	3,461
	Richfield Oil Corp.	220
	Sun Oil Co.	1,100
	Tide Water Assoc. Oil Co.	1,763
	Atlantic Refining Co.	3,200

Yours faithfully,

K. N. GESS

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PUBLICATIONS RECEIVED

New B.E.N. Products.—The latest addition to the B.E.N. range, the model DX, described in a leaflet before us, is a new version of the well-known model D spray gun, widely used for railway maintenance. The new model owes much of its success to a special principle which utilises high pressure for atomisation but low pressure for distribution. The result is absence of spray fogging and an exceptionally smooth finish. The DX gun, the working of which is fully described in the leaflet, is available in two types for use with a syphon cup and with a pressure or gravity feed paint container respectively.

Another useful new product of B.E.N. Patents, Ltd., whose address is High Wycombe, Bucks, is the Instantair coupling, which consists essentially of a plug and a socket, the latter incorporating an automatic non-return valve. Whilst the coupling is disconnected this valve remains closed, but as soon as the plug portion is connected to its socket member by a quick-acting bayonet connection, a slight turn of the wrist instantly locks the coupling and simultaneously opens the air valve. The removal of the plug automatically closes the valve. One economy effected by the use of Instantairs is the elimination of wheel valves at each connecting point and the time spent in operating them.

Constant Potential Rectification.—This pamphlet describes the Westat and Noregg patented rectifier units which are designed to give a constant voltage effect, so necessary for the efficient operation of certain devices, and much to be desired with battery charging in trickle systems, the battery being left floating on varying load without attention over long periods. In addition to the ordinary catalogue particulars, the pamphlet contains an interesting article by Messrs. S. A. Stevens and A. H. B. Walker, of the Westinghouse Brake and Signal Company's Research Department, reprinted from the wireless press, and explaining the principles of these new devices. The publication forms Descriptive Pamphlet No. 11 L of the Westinghouse series, and may be had from the company at Chippenham, Wilts.

Westinghouse Rectifier Sets, Styles R.F. and R.T.F.—This is supplement H to the Westinghouse Company's Descriptive Pamphlet No. 11, and gives suitable brief specifications of the items covered, with diagrams and numerical tables from which the required equipment can be ordered readily.

THE SCRAP HEAP

The Cheshire Lines Committee has decided to take into account the growing of vegetables in addition to floral display when assessing prizes at the annual garden inspection.

* * *

ENGINE WHISTLE NOTES

It is well known—although it may not be generally noticed—that the engine whistles of each railway company have their own note, and I have learned to tell pretty correctly what railway any particular whistle comes from. The old North London whistles had the highest pitch of any I have heard, their note being G or A, the highest notes on a piano, and the Caledonian probably the lowest—either G, the second line in the treble, or F, the first space. The whistles of American railway engines have by far the lowest pitch of all, and are hooters rather than whistles, their notes ranging from Middle C down to F, the fourth line of the bass stave. The Canadian National engines sound a three-note chord like the hooters (or buzzers as they are called in Yorkshire) of many of the factories in this country. —*From "A Blind Musician Looks Back," an autobiography by Alfred Hollins.*

* * *

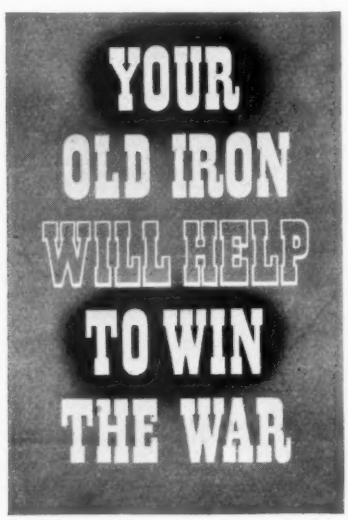
DANISH RAILWAY.—It is not generally known that a railway from Altona, two miles from Hamburgh to Kiel, in the Duchy of Holstein, has been projected and is about to be constructed, under the auspices of the King of Denmark, with a view of effecting a communication between the North Sea and the Baltic. Mr. George Watson Buck, engineer-in-chief to the Manchester & Birmingham Railway Company, has been selected as the engineer to the undertaking.—*From "The Civil Engineer & Architect's Journal" for September,* 1840.

* * *

A correspondent writing in *The Observer* recently tells of a placard which was displayed some years ago in a Glasgow tramcar. It bore the mysterious inscription :—

ALWAYS FACE FORWARD
Proverbs 3, verse 23

On looking up the passage the words were found to be "Then shalt thou walk in thy way safely, and thy foot shall not stumble."



Two of the posters issued by the Scrap Iron & Steel Campaign in its drive to collect scrap metal in order to save shipping space for foodstuffs and raw materials

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

INDIA

Scientific Investigation into Safety of Railway Bridges

From time to time reference has been made in the columns of THE RAILWAY GAZETTE to the work of the Central Hydrodynamic Research Station at Khadakvasla, near Poona. The latest annual report of this institution mentions the large variety of problems, basic and specific, ranging from the training of river courses to control of silt deposit, that have been investigated during the year under report. Of special interest to the railway world is the inquiry undertaken to determine the scour caused by a maximum flood, and the effect of piers and guide banks on scour in connection with the proposal of the Eastern Bengal Railway to build a bridge across the Brahmaputra near Amingaon. Though the bridge site is at a narrow defile of the river, the latter is nearly half-a-mile wide at this place. As a result of experiments carried out at the station, a suitable alignment has been selected for the bridge and recommendations made for the guide banks and protection works by stone pitching.

Experiments were also made with a large-scale model of the Ganges above the Hardinge Bridge to ascertain what changes were likely to occur in the river course during the next few years. It will be remembered that the Hydrodynamic Research Station provided valuable data and advice a few years back when the vagaries of the river Ganges jeopardised the safety of the Hardinge Bridge, necessitating the requisition of the services of Sir Richard Gales from his retirement in England to plan a scheme of protective works.

Railway Labour

It is ascertained from the annual report of the Supervisor of Railway Labour for the year 1938-39, that all State-managed railways and three important company-managed lines are now complying with the provisions of the Hours of Employment Regulations. The majority of railway employees in India are now protected by legislation, which followed upon the Government of India's ratification of the International Labour Convention, adopted first at Washington in 1919 and later at Geneva in 1921. The total number of non-gazetted employees on all Class I railways was 652,256 on March 31, 1938. Of this figure more than 76 per cent. belonged to the seven railways on which the regulations were in force, and thus enjoyed the benefits of the legislation. In general, the railways maintained a satisfactory standard of employment. The percentage of workers classified as "continuous" improved on the North Western, Eastern Bengal, and Great Indian Peninsula Railways, but decreased on the Madras & Southern Mahratta and Bengal & North Western Railways. A large percentage of continuous workers enjoyed a full calendar day's rest in the place of the minimum of 24 hours' weekly rest. The Supervisor has drawn special attention to the large number of employees who have been excluded from the operation of the Hours of Employment Regulations on the East Indian Railway.

There was a slight increase in the percentage of workers classified as "essentially intermittent" on the N.W., B. & N.W. and M. & S.M. Railways, and a decrease was recorded on the E.I., E.B., B.B. & C.I. and G.I.P. Railways. There was also a decrease in the percentage of workers classified as "excluded" on the N.W., G.I.P. and E.B. Railways, which indicated that more staff was brought under the scope of the regulations on these systems. The percentage of "excluded" staff on the B. & N.W.R. is still high. The staff who generally worked outside rostered hours was limited to the goods and transportation branches, particularly inferior servants who loaded and unloaded smalls at roadside stations. The Supervisor considers that there are indications that both the administrations and the staff realise their responsibilities in this matter. Stressing the urgent necessity for improvement in the case of goods staff, the Supervisor has suggested the employment of extra staff when it is evident that the work cannot normally be finished during the rostered hours of duty.

Air Mail Traffic Lower

Since the outbreak of war, air mail traffic has been reduced to a quarter of the pre-war volume. Under the "all up" air mail scheme, the average quantity of mails brought into India from Britain in a week by five services exceeded 7,500 lb. Since the suspension of the Empire scheme, the heaviest mail in a week has been 2,200 lb. The shrinkage in mails is, however, amply compensated by a two-fold increase in passenger traffic. Both outgoing and incoming planes are usually heavily booked.

SOUTH AFRICA

Report of Railways & Harbours Board for the Calendar Year 1939

The annual report of the Railways & Harbours Board for the calendar year 1939 states that a new revenue record was established, namely £39,382,405 against an expenditure of £38,101,561, leaving a surplus of £1,280,844. From this amount must be deducted the deficit of £30,192 brought forward from 1938, leaving a net surplus of £1,250,652. Included in the expenditure item is an amount of £2,487,000 for special appropriations.

A further record for passenger traffic was created, the number of journeys undertaken totalling 118,608,295, an increase of 6,707,323 over the figure of the previous record established in 1938. Goods and mineral traffic (other than coal) totalled 21,538,413 tons with a revenue of £21,108,542, representing increases of 2,461,873 tons and £925,882 respectively. Rolling stock valued at £4,314,291 was placed in service during the year; the value of stock authorised, on order, under construction or contemplated as at December 31 was £9,843,929. Of this amount £1,916,786 is to be spent on rolling stock to be obtained from overseas.

Road Services

The mileage of road motor services operated at the end of the year was 15,913 compared with 15,100 the previous year. New services and extensions totalled 1,065 miles, and the revision of existing services and the withdrawal of non-paying services resulted in a decrease of 252 miles. The number of passengers carried was 6,055,791, an increase of 756,385 over the previous year. Goods traffic increased from 566,760 to 793,504 tons, and cream increased from 1,599,917 to 2,174,289 gals. Revenue increased from £634,257 to £759,367 and expenditure from £655,930 to £755,082.

Airways

As a result of the outbreak of hostilities, 18 of the administration's JU 86 aircraft were transferred to the Defence Department. This number represents 62 per cent. of the administrations' fleet, and the commercial operations of the airways have been reduced to skeleton proportions. Passenger traffic increased from 34,162 to 35,578; freight from 112,108 lb. to 180,366 lb. luggage decreased from 1,253,356 lb. to 1,246,110 lb. and mail matter from 2,893,531 lb. to 2,448,046 lb. Revenue totalled £214,689 and expenditure, inclusive of interest and depreciation charges, amounted to £495,290. The net deficit for the year was £283,791 compared with £320,128 for the year 1938.

New Shipping Service

The first co-operative shipping service in South Africa will be established soon, as a result of a resolution passed recently by the Fruit Growers' Co-operative Exchange Limited—the central body representing the Deciduous Fruit Exchange and the Citrus Exchange—to extend its present operations by becoming a general co-operative shipping service. This most important decision marks a new era in the general development of agricultural policy to concentrate the handling and disposal of all agricultural products through one co-operative channel. A commission of enquiry into co-operation had strongly recommended in its report that the present federal Fruit Growers' Exchange should be reconstructed into a federal shipping company, undertaking a forwarding and clearing service for co-operative associations, but it had not been possible to give effect to these

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recommendations until the Co-operative Societies Amendment Bill became law. The trail for co-operative shipping had however been blazed some years ago when the Fruit Growers Exchange established a shipping service for fruit exporters. Though the fees charged were less than ruling rates, the Fruit Growers' Exchange was, in the first year, able to pay expenses and return a substantial surplus. As a result of the activities of the exchange, a general reduction of shipping costs to fruit growers had been brought about. Remarkable success has been achieved by the exchange. More than 250,000 tons of fruit had been exported in 1939 and, in spite of lower charges, there remained for distribution £10,784 which included rebates on charges for repacking citrus fruit; the rebates amount to approximately 60 per cent. of the agency fees charged in the 1939 season.

These results have aroused the interest of those co-operative companies interested in other products, and they are realising the potentialities of a general co-operative shipping company that will not only carry out all shipping requirements but will also do the clearing, forwarding, insurance and customs work.

Railway Rates and Rural Industries

The report of the Rural Industries Commission issued recently, in commenting upon the question of railway rates in relation to the establishment of rural industries, points out that the products manufactured by industries using base mineral as raw materials are relatively low priced, and it is essential for such industries to obtain their raw materials at as low prices as possible. Low railway rates for the transport of ores and minerals are essential to the establishment of these industries. Proximity to markets is one of the most important factors affecting the location of industries. An important railway rating principle affecting location is that which provides a lower rate on raw materials than on the finished product. This principle is fundamentally sound from the business and industrial point of view, and any departure, therefore, would not assist in locating industries in inland rural areas, but would unduly favour industries located in areas at or near the coast, especially in cases where raw materials are imported. No railway rating system whereby geographical advantages and disadvantages can be eliminated is sound or practicable, and it is not possible to place all rural areas on the same basis in respect of transport charges in relation to the principal markets. Preferential railway rates in respect of South African manufactures would confer undue advantages on factories in the coastal belt at the expense of factories in the inland provinces and would conflict with the provisions of the "South Africa Act." The higher rates applicable to goods transported to and from branch lines may have had the effect of influencing industrialists against establishing their factories at places on branch lines. The commission is of opinion that the railway administration should apply the main-line scale of rates and regulations to goods railed from factories served by branch lines and also to raw materials railed to such factories.

THE FAR EAST

New Japan—Manchukuo Sea Route

A new route between Japan and Manchukuo in connection with the railways on both sides of the Sea of Japan is now in operation *via* the port of Rashin in North Chosen. The Japanese Government Railways run express train services to Niigata, the port on the Japanese side, and the South Manchuria Railway runs connecting trains from Rashin to Hsinking, the capital, and to Chiamassu on the Sungari river in North Manchukuo. The new service was opened on February 11, 1940. The former Tsuruga—Seishin—Vladivostock—Tsuruga round trip steamship service, connecting with train services on the Japanese side only, no longer carries passengers regularly.

Three Regular Sea Routes

The three regular routes are now :—

(*a*) *Via Shimonoseki and Fusan*—
Tokyo–Shimonoseki—(rail) 1,130 km. (706 miles)
Shimonoseki–Fusan—(sea) 120 nautical miles
Fusan–Hsinking—(rail) 1,530 km. (956 miles)
Total distance, 1,662 land miles and 120 nautical miles; time, 60 hr.

(*b*) *Via Shimonoseki, Moji and Dairen*—
Tokyo–Shimonoseki—(rail) 1,130 km. (706 miles)
Shimonoseki–Moji—(railway ferry)
Moji–Dairen—(sea) 600 nautical miles
Dairen–Hsinking—(rail) 701 km. (438 miles)
Total distance, 1,144 land miles and 600 nautical miles; time, 90 hr.

(*c*) *Via Niigata and Rashin*—
Tokyo–Niigata, Jap. Gov. Rlys.—(rail) 430 km. (269 miles)
Niigata–Rashin, Nippon Kai. Kishen—(sea) 450 nautical miles
Rashin–Hsinking, S.M. Rly.—(rail) 560 km. (350 miles)
Total distance, 619 land miles and 450 nautical miles; time, 70 hr.

It is hoped to improve on the latter time in the near future, and eventually to reduce it below the fastest time *via* Fusan.

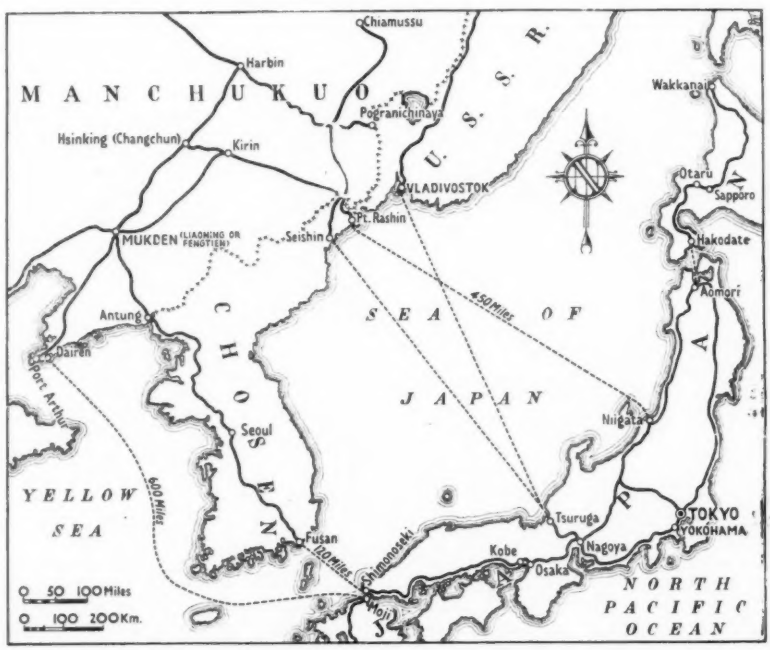
UNITED STATES

Seaboard Air Line Centenary

The Raleigh & Gaston Railroad, a predecessor of the Seaboard Air Line, was chartered in 1835 and opened in 1840. To mark the centenary the Seaboard Air Line arranged an elaborate ceremony on May 21 in Raleigh, the capital of North Carolina. The original undertaking linked Raleigh with the completed Greenville & Roanoke Railroad. The S.A.L. operated a special centenary train over the route of the original line, and took up passengers at the original stops.

The Westchester Line, New York

On May 1 the City of New York acquired formal ownership of the disused section of the New York, Westchester & Boston Railroad lying wholly within the city limits. A large proportion of the payment was returned immediately to the municipal authorities in payment of outstanding taxes. The operation of this suburban electric line was suspended on December 31, 1937. It is reported that next autumn the New York municipal authorities will begin to work the section they have acquired, not as a part of the New York subway system, but as a separate rapid transit line at a 5-cent fare. [Earlier reference to the fate of this line appeared in our issue of May 20, 1938 (page 978), and in the *Electric Traction Supplement* dated May 27, 1938.—ED., *R.G.*]



Skeleton sketch map showing the three routes between Tokyo and Manchukuo

BRITISH LOCOMOTIVE WORKING 1923-39

An analysis of day-to-day locomotive performance in ordinary express passenger service, forming a basis on which an efficient train service might be built up

(From a correspondent)

THE abrupt cancellation, due to the war, of all high-speed express passenger train services in this country, and the substitution of trains with 50 m.p.h. start-to-stop bookings, brings to an end, temporarily, a sequence of rapid development in locomotive engineering science and passenger train services. This lull affords an opportunity to collate the results of ordinary day-to-day performance, and to summarise them in such a way as to provide a measure of locomotive capability which may be useful when the time for post-war reconstruction comes. The present article is the result of sixteen years' continuous observation of passenger train running, and covers practically every main route in the British Isles. While it is based almost entirely upon the personal observations of the writer, the results accord very closely with prevailing locomotive form as shown in the "British Locomotive Practice and Performance" feature of *The Railway Magazine*. The various locomotive types group themselves naturally under some half-dozen main classes, not always corresponding with the nominal tractive effort of the designs concerned, but generally agreeing with drawbar horsepower estimates based on the proportions of the boilers and fireboxes. The following are the locomotive types the work of which is represented in the present summary, grouped under six main power groups:—

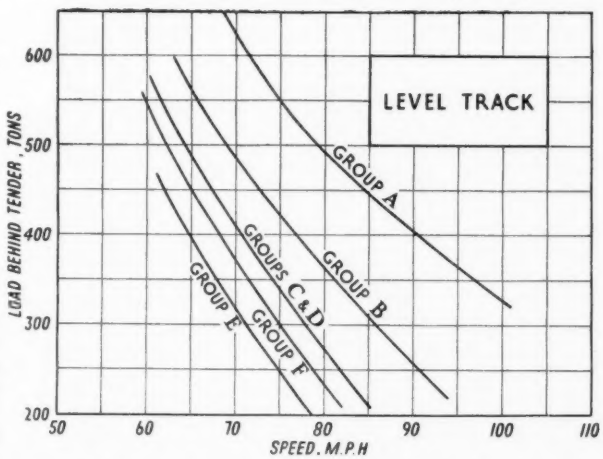
Group	Type	Railway	Class
Class A (Super-power locomotives)	4-6-2	L.M.S.R. ...	"Coronation"
	4-6-2	L.M.S.R. ...	"Princess Royal"
	4-6-2	L.N.E.R. ...	Streamlined "A4"
Class B (First-line express passenger locomotives)	4-6-2	L.N.E.R. ...	Non-streamlined
	4-6-0	G.W.R. ...	"King"
	4-6-0	L.M.S.R. ...	"Royal Scot"
	4-6-0	S.R.	"Lord Nelson"
	4-6-0	G.S.R. (Eire)	"800"
	4-6-0	G.W.R. ...	"Castle"
	2-6-2	L.N.E.R. ...	"Green Arrow"
Class C (Intermediate express passenger locomotives)	4-6-0	L.N.E.R. ...	"Sandringham"
	4-6-0	L.M.S.R. ...	"Jubilee" & "Patriot"
	4-6-0	S.R.	"King Arthur"
	4-4-0	S.R.	"Schools"
	4-6-0	G.W.R. ...	"Star" 4-cyl.
	4-6-0	G.W.R. ...	"Saint" 2 cyl.
Class D (General utility locomotives)	4-6-0	L.M.S.R. ...	"5" 2 cyl.
	4-6-0	G.W.R. ...	"Hall"
	2-6-0	L.N.E.R. ...	"K3" 3 cyl.
	2-6-0	L.M.S.R. ...	"5" 2 cyl.
Class E (Light express passenger)	4-4-0	L.M.S.R. ...	Midland compound
	4-4-0	L.N.E.R. ...	"Shire" and "Hunt"
	4-4-0	L.N.E.R. ...	"Director"
	4-4-0	L.M.S.R.	"George the Fifth"
	4-4-0	S.R.	"L1"

In making this classification of locomotives it was only natural to find that some classes showed an ability slightly above others in the same group; but taking all observations into account these differences did not appear to be of sufficient importance to warrant separating out the types concerned into further intermediate power groups.

The results have been summarised under four different conditions of gradient. Under the various loadings trains weighing 300 tons behind the tender include the streamlined expresses of the L.N.E.R. and the L.M.S.R., the maximum unpiloted loadings of the Midland Division of the L.M.S.R., and similarly timed services on the G.W.R. The general figure of 400 tons covers a great number of first class bookings at 60 m.p.h. or thereabouts, and also some considerably faster services such as the 5.25 p.m. from Liverpool to London, with its 64 m.p.h. timing from Crewe to Euston. Lastly, 500 tons represents the general upper limit of passenger train loading in this country, a figure dictated more by traffic working considerations and station facilities rather than the limit of locomotive capacity. As to gradients, 1 in 100, 1 in 200, and 1 in 330 have been chosen as convenient bases for classifying results, and a further summary relates to running over level tracks.

The results of this investigation are given as a series of graphs representing the sustained speed that may be expected from each of the five classes of locomotive indicated in varying conditions of express passenger service. In selecting individual performances to give points on the various graphs certain exceptional feats have purposely been omitted, as these efforts were scarcely capable of being sustained for any length of time, and were due to a brief extending of the locomotives in question in order to regain normal paths after the incidence of signal delays or other out-of-course slacks. At the other end of the scale certain performances that were below standard, due sometimes to adverse weather conditions, have also been omitted, in that they do not represent the ordinary day-to-day work of the locomotive type in question. Sufficient data are available relative to each individual locomotive type concerned in this summary to put the normal capacity beyond much doubt. A certain proportion of the running recorded by the writer was, however, on schedules which did not demand so high a standard of performance as is represented by the graphs, and these records have been omitted, as they would tend to underrate the capacity of the locomotives.

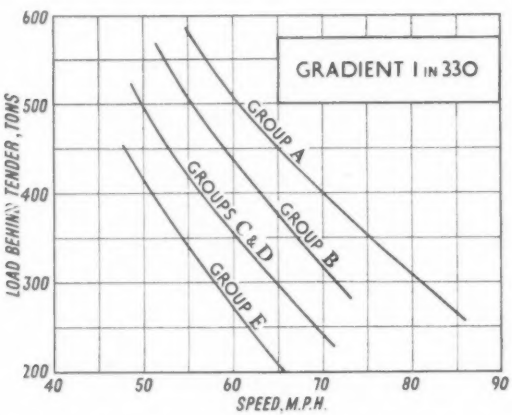
The first graph relating to running on level track, shows that even with 4-4-0 locomotives, in Group E, speeds in



excess of 60 m.p.h. may be expected with loads up to 450 tons. The large express engines in Group B have consistently given sustained speeds of 70 m.p.h. on the level with loads of 500 tons and over, and 90 m.p.h. with loads in the 200-300 ton range. Day-to-day feats of the Group A locomotives have produced a graph as remarkable in the

consistency of the points on which it is based as in the standard performance it reveals. Among individual performances, the streamlined L.N.E.R. 4-6-2s have given such speeds as 70 m.p.h. with 635 tons, 79 m.p.h. with 510 tons (in this case working on 15 per cent. cut-off), and 104 m.p.h. with 325 tons. One of the L.M.S.R. streamlined 4-6-2s maintained a speed of 95 m.p.h. on the level when hauling 370 tons.

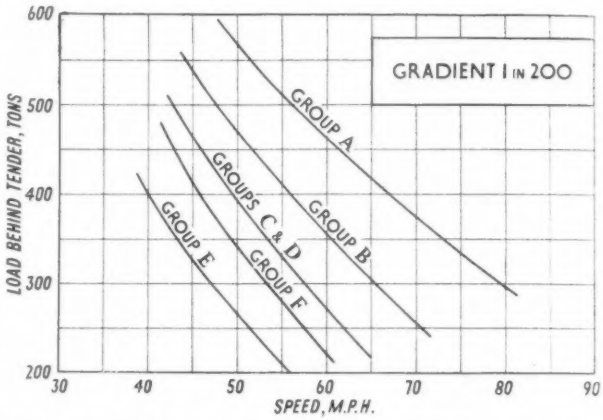
In level running the work of the intermediate express passenger locomotives of Group C, and the mixed-traffic types included in Group D, is so much alike that one graph suffices for both. The L.M.S.R. Class " 5 " 4-6-0s have provided most of the points in the higher ranges of speed, though at below 60 m.p.h. the L.N.E.R. Class " K3 " 2-6-0s have also contributed a full share. It is remarkable to find a 4-4-0 type in this power group, but the consistency of the work of the Southern Railway " Schools " class is such as to put them in Group C, rather than among the other 4-4-0 locomotives; on the London—Bournemouth service they have worked loads up to 530 tons at speeds of over 60 m.p.h. on level track. The graph relating to the Group E engines is based mainly upon the work of the Midland compounds, on the L.N.W. and Caledonian sections of the L.M.S.R., though the performances of the L.N.E.R. Class " D49 " 3-cylinder design have provided data in close agreement. Runs timed in the earlier part of the period under review show that the " Directors " of the former Great Central Railway, and the " George the Fifths " of the former L.N.W.R. did work fully up to the same standard, though probably on a higher coal consumption. Thermal efficiency does not, however, come within the range of this analysis; here locomotives are considered purely from their ability as motive power units.



As to performance on rising gradients, the graphs relating to 1 in 330 inclines are based mainly on work over the former L.N.W.R., together with certain areas of less extent on the Southern and the Great Western Railways. The 1 in 200 graphs have been constructed from more extensive observations, and cover the G.N., N.E., and G.C. sections of the L.N.E.R., the Midland, Caledonian, and G. & S.W. sections of the L.M.S.R., and limited stretches of the Southern and Great Western Railways. The 1 in 100 group represents about the hardest collar work to be found in first class express schedules, the 1 in 70-80 of the Shap, Beattock, and Honiton inclines alone excepted.

The 1 in 330 group has certain limitations owing to having been prepared almost entirely from data obtained with L.M.S.R. locomotives; but the general correspondence of performance of the types concerned in other gradient conditions with locomotives of the same power classification is such that the graphs may be regarded as representative of the classes as a whole. Up a gradient of 1 in 330 speed with the Group A locomotives varies between 60 m.p.h., with 500 tons, to 85 m.p.h. or more with 300 tons. The large express locomotives in Group B may be expected to haul loads up to 450 tons up gradients of this inclination at 60 m.p.h., this capacity fully qualifying them to deputise for the super-locomotives of Group A on all but the most exacting turns.

On gradients of 1 in 200 with 450-ton trains the general Group A speed is 61 m.p.h., against 65 on 1 in 330; with Group B it drops from 59 to 52 m.p.h., and with



Groups C and D from 53 to 46 m.p.h. At the same time there is again evidence that these figures are well within the capacity of the locomotives concerned. All the curves have a slightly hyperbolic tendency, and certainly the uphill speeds constantly maintained, not only by the streamlined trains, but also on numerous occasions by far less tightly-timed expresses on the Midland and Caledonian sections of the L.M.S.R., are remarkable.

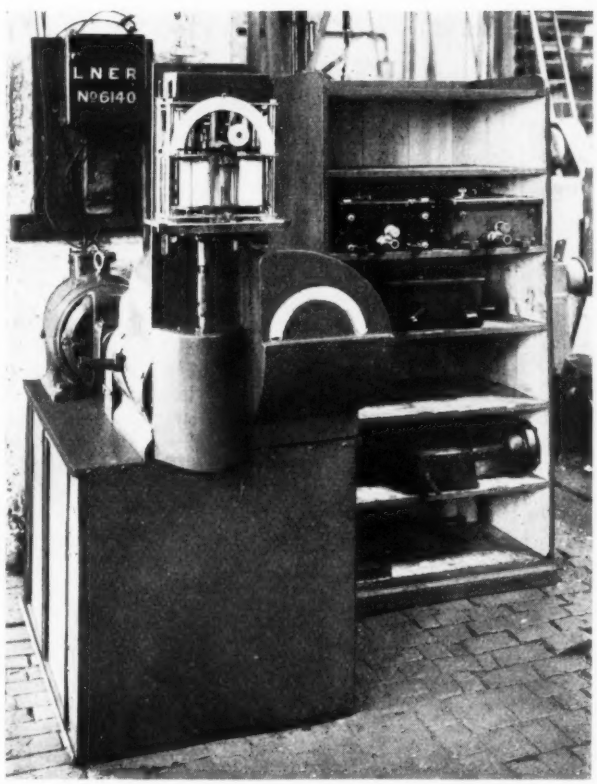
Gradients of 1 in 100 reduce high-speed express running to the level of hill-climbing pure and simple. Many factors make this group the most difficult of all to collate in a form that provides a reasonable demonstration of locomotive ability, and at the same time conforms to average day-to-day performance. The L.N.E.R. Cockburnspath and L.M.S.R. Grayrigg inclines provide a gruelling test, yet comparison of the performance here with, say, that on the Dunning—Gleneagles bank, or the long climb from Settle Junction to Blea Moor often gives contradictory results. Cockburnspath and Grayrigg have to be climbed in the middle of a long turn of locomotive duty, often nearly 400 miles continuously, on which the speed is high for most of the time. It is the general practice to take these heavy gradients under comparatively easy steam. Coming south from Edinburgh, with 500-ton loads even the streamlined 4-6-2s drop to 30 m.p.h., or less, up the 4½ miles at 1 in 96 forming the Cockburnspath bank, and similar leisure will usually be noted on the upper reaches of the Grayrigg bank by the L.M.S.R. " Royal Scots " and Pacifics. On the other hand, engines making the comparatively short run from Perth to Glasgow usually tackle the Gleneagles incline with great vigour.

The reason is twofold. On a long run the time to be gained by pounding a locomotive up a severe gradient is of doubtful value, if such treatment may result in shortness of steam later in the journey. Further than this the modern high-speed locomotives engaged upon through London—Glasgow, or London—Edinburgh turns have their valves set for short cut-off working, to give equal cut-off at each end of the cylinder at about 15 per cent. To take a 500-ton load up a 1 in 100 bank at 40-45 m.p.h.

would require 35 to 40 per cent. cut-off, and on an engine with ordinary link motion with such a degree of "opening out" there would be a decided inequality in the work performed on the forward and backward stroke of the pistons. In severe cases this might well cause heating, and consequent failure of the locomotive. On a shorter turn the locomotives can be tuned up to the special characteristics of the road and be opened out to a far greater extent. In certain cases, also, extremely vigorous climbing is needed to maintain the station-to-station times booked on short runs.

On long-distance express workings the general standard of uphill speed on 1 in 100 gradients is not more than about 35 m.p.h. This can be said to apply to Group A locomotives with 500-ton loads, and in a uniformly descending graph through the intermediate classes to about 250 tons with Group E locomotives. On shorter runs many considerably faster climbs have been noted, such as 38 m.p.h. with a 365-ton load by a Group E locomotive, or 46 m.p.h. with 210 tons, by one in the same power classification. The only figures comparable to these regularly achieved in really long locomotive turns were the result of the remarkable timing of the L.M.S.R. Midday Scot between Lancaster and Penrith, prior to the inauguration of the Coronation Scot service. Then loads of 470-520 tons were taken up the Grayrigg bank at speeds sustained at 40-42 m.p.h. on the final reach, inclined at 1 in 106. In the course of a through locomotive working from London to Glasgow this strenuous timing proved somewhat of a tax upon the "Princess Royal" class 4-6-2s and strict sectional time over the mountain stretches was not always kept. A still more exacting booking, made in the course of a much shorter turn from Leeds to Carlisle, required the L.M.S.R. Thames—Forth Express to maintain an average speed of 49 m.p.h. throughout the 13·9 miles of continuous 1 in 100 ascent from Settle Junction to Blea Moor. On this timing the load limits were 255 tons for a Stanier mixed-traffic 4-6-0, and 290 tons for one of the 3-cylinder 4-6-0s of the "Jubilee" or "Patriot" types, but the actual loads were seldom as heavy as this. This was the sequel to the experimental run on October 13, 1937, when "5XP" 4-6-0 engine No. 5660 *Rooke*, hauling 305 tons, made the climb in 16 min. 20 sec., thus averaging 51 m.p.h., with a minimum speed of 46 m.p.h. This effort needed 35 per cent. cut-off.

Mention of the loading limit for the Stanier Class "5" mixed-traffic 4-6-0s on the Settle and Carlisle road brings to light a curious anomaly. These same 4-6-0s were rostered to take banking assistance on certain stretches of the Highland line when the load exceeded the same figure of 255 tons. But whereas in the Midland case a speed of 44-45 m.p.h. was demanded up 1 in 100, up the worst Highland gradient, 12¾ miles at 1 in 70-85, the fastest train was booked at only 26 m.p.h. On the latter section the Stanier 4-6-0s should be able to take at least 350 tons unpiloted, on the basis of regular Midland Division performance. Many other divergences, not perhaps so marked as this, have existed in the past, and the foregoing analysis is offered in the hope that with past experience in view a more ordered and logical reconstruction may be undertaken when the time comes for restoring peacetime travel facilities.



Locomotive speed recorder testing machine

New Machine Tools at Doncaster Works

Machine for testing and checking speed recorders of locomotives in the L.N.E.R. shops

THE machine illustrated herewith (the photograph was taken by permission of Sir H. Nigel Gresley, Chief Mechanical Engineer, London & North Eastern Railway) was specially designed and constructed at the Doncaster works of the L.N.E.R. for the purpose of testing and checking speed recorders fitted to locomotives. The machine comprises a constant speed motor, a twelve-change gearbox, and a train of gear wheels from the transmission shaft to the recorder drive of such a ratio as to give the desired drive for the particular make of recorder to be tested. Each make of recorder requires an individual train of gear wheels. The twelve-change gearbox permits the recorder to be driven and checked at each of the 10 m.p.h. graduations and the recorder clock is checked by the revolutions the motor has made whilst the recorder has been under test.

The Cost of Signal Lighting

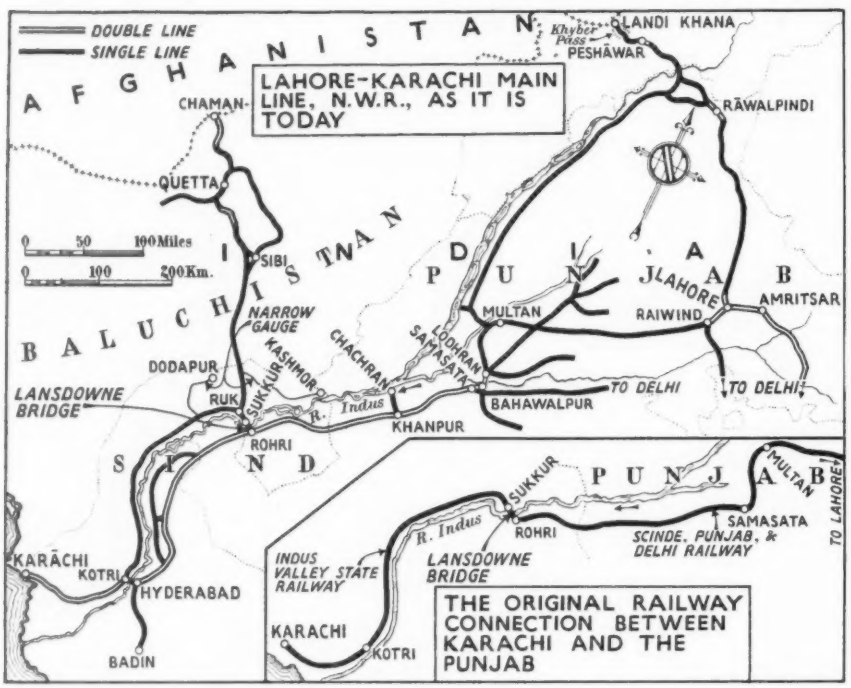
The cost of lighting the many thousands of semaphore and other oil lighted signals on the British railways forms a considerable item in the operating expenses. Thus, for example, the L.M.S.R. alone has some 23,000 oil signal lamps which consume about 750,000 gallons of oil annually. Since war began the price has risen as much as 54 per cent. and the company is urging on the staff responsible the importance of avoiding waste in filling and trimming the lamps; at the same time there must be no risk of impairing the clearness and good visibility of the night signal aspects, on which safe working so much depends.

XUM

INCREASING THE CAPACITY OF A FAMOUS INDIAN BRIDGE

By removing the roadway decking from the Lansdowne bridge, on the N.W.R., an increase in the capacity of the line has been obtained

AS originally opened on March 25, 1889, the Lansdowne bridge,* on the North Western Railway across the Rohri channel of the River Indus, near Sukkur, carried, in addition to the single broad gauge line, a 16-ft. roadway on the same deck—the road and rail traffic being worked level-crossing fashion—and two footways. In 1889, the heaviest locomotives in service were the 13½-ton axleload " L " class, engine and tender weighing in working order 73 tons. With the subsequent increase in railway loads, means had to be taken to make the bridge, with its 820-ft. cantilever span, fit for heavier engines. In 1910, a secondary system of cross girders was added under the stringers. This permitted single engines of the heaviest type to be run across the bridge light *en route* for the heavily graded sections of the line between Sibi and Quetta.



Sketch map showing position of Lansdowne bridge and railways approaching it today. Inset of railway when bridge was built in 1889

Former Limitations of the Bridge

The strengthening of the floor system added to the dead weight of the structure, and for many years the speed of all trains and light engines was restricted to 3 m.p.h. All engines at present running on the N.W.R. are permitted to cross the bridge as light engines, but only 16-ton axle load 0-6-0s and 4-4-0s and 13-ton axle load " XA " 4-6-2s are permitted to run with loads. Coupled engines are not permitted to run, but two engines from Groups IV and V may be attached to the same train provided there are at least 20 four-wheel goods vehicles or 15 four-wheel coaching vehicles or 8 bogies between the two engines. As the single line between Rohri (on the Karachi—Lahore main line) and Sukkur carries almost all the Quetta traffic as well as the Lahore—Karachi trains running *via* the Dadu loop on the right bank of the Indus, such a severe speed and loading restriction was a serious handicap.

The original bridge cost Rs. 26,96,000 (over £200,000) and so any scheme to improve its carrying capacity and so postpone complete replacement was worth considering. In 1939, after consultation with the Sind Government, it was decided that road traffic should be diverted to cross the Indus by way of the Lloyd Barrage, a few miles down the river, and that the roadway decking should be removed from the Lansdowne Bridge. This, after allowing for the additional weight of two trolley refuges and a modernised track on transverse instead of longitudinal timbers, secured a reduction in the dead weight of the bridge of 180 tons.

Old and New Flooring Systems

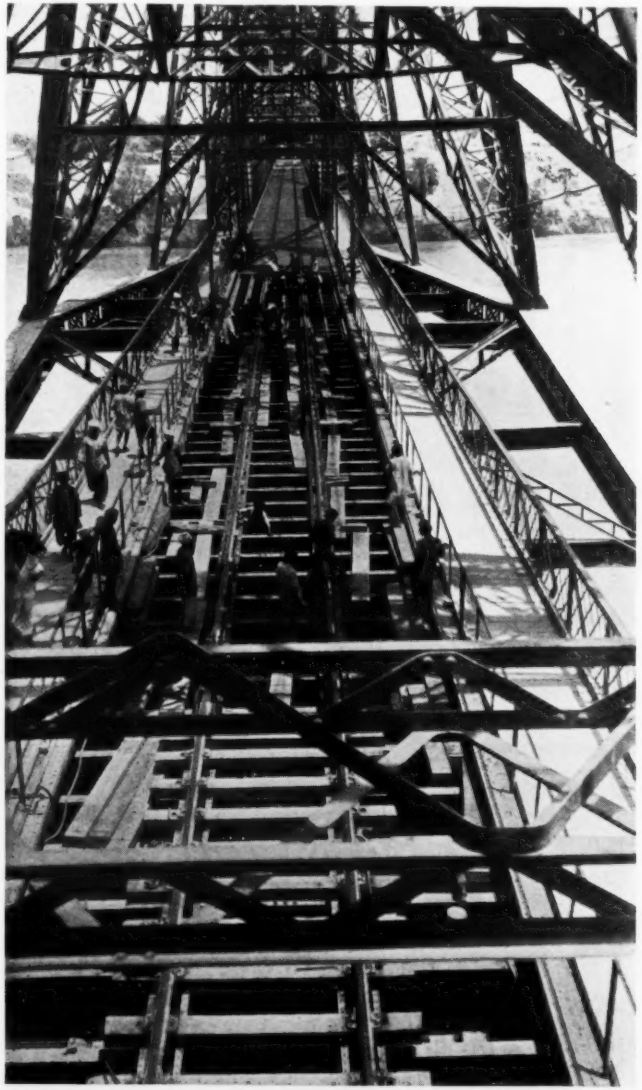
The floor system followed the practice of the last century, the rails being spiked to longitudinal timbers wedged in the bosoms of built-up trough section Z-bar stringers. The roadway, level with the top of the rails, was of 1½-in. thick *kikar* timbers laid diagonally across and nailed to other timbers bolted into the valleys of 7-lb. corrugated iron sheeting—an early form of iron troughing 3 in. deep, $\frac{3}{16}$ in. thick and 4 in. pitch—spanning transversely between the rail stringers and supplementary Z-bar stringers under the road. The laying of the rails on longitudinal timbers has long been recognised in India as bad practice, and so it was decided that the opportunity should be taken to replace these by new transverse timbers laid on the top flanges of the old railway stringers, the webs of which were stiffened by new steel diaphragms.

The introduction of the transverse timbers entailed the raising of the rail level by practically 8 in., and the increase in headroom had been duly allowed for when the defence bridges over the gates at each end of the bridge were raised in 1938 to permit the passage of the latest I.R.S. locomotives.

Details of Work

The Lansdowne bridge was finally closed to road traffic on April 1, 1939. The removal of the decking presented no difficulty as the bridge has a complete system of lateral bracings and was not dependent on the troughing for

* An article on the jubilee of the Lansdowne Bridge, was published in THE RAILWAY GAZETTE of March 24, 1939 (p. 508)

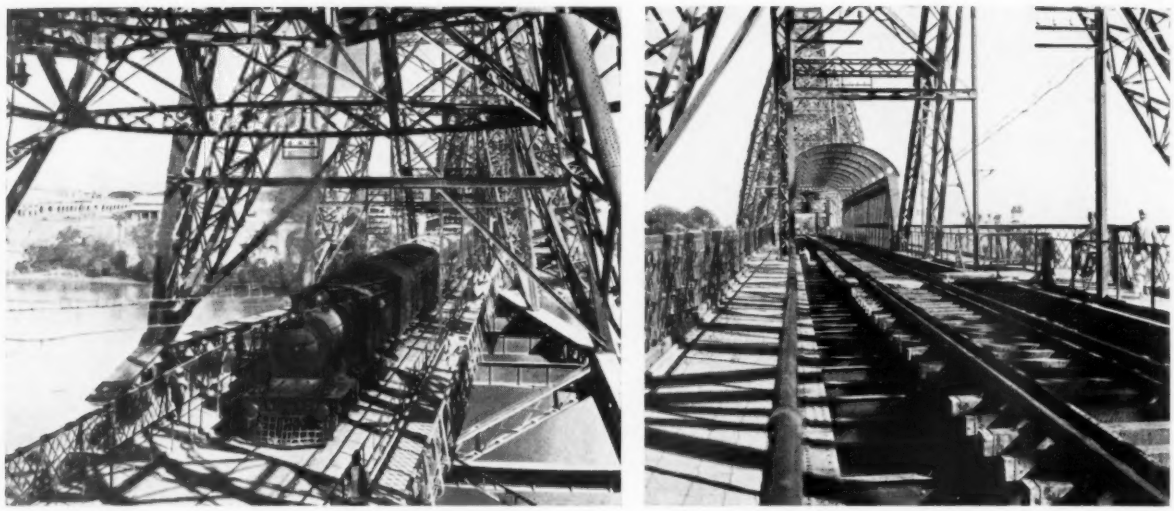


Removing roadway decking (background) and replacing with transverse sleepers (foreground)

New flooring completed and under test with a 600-ton train hauled by an HG/H class 2-8-0 type engine

Transverse timbering in hand. Note the difference in rail levels over old and new flooring and ramp between them

REMOVAL OF ROADWAY DECKING OVER THE LANSDOWNE BRIDGE, INDIA



Different parts of the Lansdowne bridge, (left) showing passenger train crossing prior to removal of roadway, and (right) after its replacement by the transverse sleeper decking

lateral stiffness. The change over from longitudinal to transverse timbers, which had to be completed without interference to railway traffic, was not so straightforward. The longest period in a day when the engineers were allowed possession of the bridge was 2½ hr. The approach track at the Rohri end of the bridge was inclined so as to raise the level of the rails 7⅛ in. and, at the same time, the rails on the bridge were ramped for a distance of 46 ft. so as to meet the raised approach track. A temporary ramp consisting of six easily manhandled sections was fixed within the Z-bars of the stringers, and three sections were used under each rail, giving a short gradient of 1 in 45 between two vertical curves. Each section consisted of two ⅜ in. web plates welded to diaphragms upon which the rails were secured by clips and bolts. This ramp was gradually moved across the bridge towards the Sukkur abutment, the old track being removed ahead and the new timbers and rails fitted behind.

With the raising of the speed of trains on the bridge, it became necessary to provide two trolly refuges. To make room for these, the footways were pushed out on extended brackets. Light hand railings existed between the footways and the road and these were supplemented with additional uprights and Phœnix wire woven fencing.

The whole of the work of removing the roadway, alterations to track, etc., was carried out by the Indian labour of the Bridge Branch of the N.W.R., the welded ramps being fabricated in the workshops at Jhelum.

On completion of the work, tests were made under trains consisting of an " HG/G " 2-8-0 engine followed by loaded goods wagons (equivalent to 1·3 tons a foot run of track) run across the bridge at speeds up to 15 m.p.h. The horizontal movement and vertical oscillations at the end of one of the cantilevers were measured by means of a seismograph and the stresses in certain members were recorded by Fereday Palmer stress recorders.

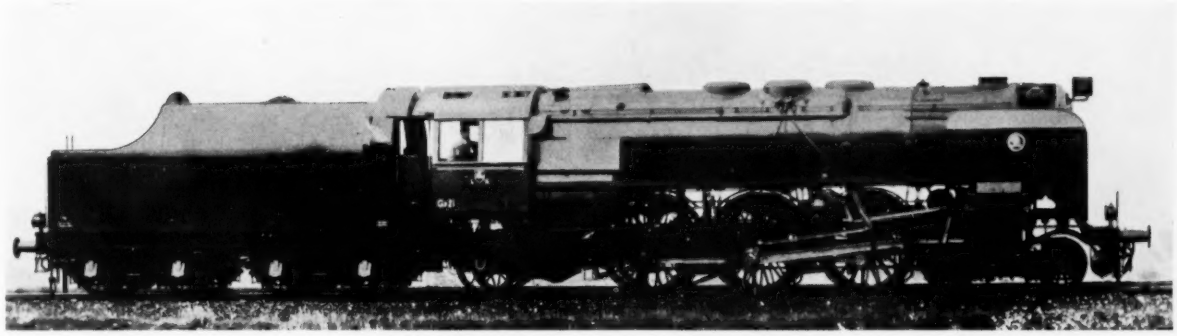
On the satisfactory completion of these tests, the maximum permissible speed of trains was raised to 10 m.p.h. and single 2-8-0 type engines with 17-ton axle loads are now permitted to work trains across the bridge. Thus, with the roadway removed, the Lansdowne bridge has been given a new lease of life and the capacity of this busy section of single line has been increased.

0-6-0 engine of passenger train climbing the ramp from old to new decking

Details of ramp which was moved along the bridge as change of flooring proceeded

NEW PACIFIC LOCOMOTIVES FOR LITHUANIA

Six powerful 4-6-2 express engines have recently been delivered by the Skoda Works to the Lithuanian State Railways



AT the end of 1939 six new Pacific type locomotives were delivered by the Skoda Works of Pilsen to the 4-ft. 8½-in. gauge Lithuanian State Railways. The following are their leading dimensions :—

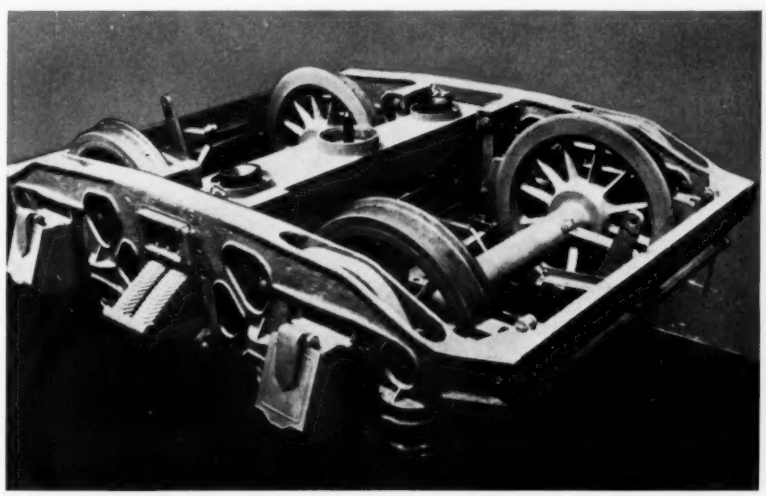
Cylinders, dia.	23½ in.
,, stroke	26½ in.
Wheels, dia., coupled	6 ft. 6½ in.
,, ,, leading bogie	3 ft. 3⅛ in.
,, ,, trailing truck	4 ft. 3½ in.
Evaporative heating surface, boiler tubes (126)	1,453 sq. ft.
,, ,, ,, flue tubes (35)	1,076 sq. ft.
,, ,, ,, firebox	207 sq. ft.
,, ,, ,, total	2,736 sq. ft.
Superheating surface	861 sq. ft.
Firegrate area	52 sq. ft.
Boiler pressure, per sq. in.	235 lb.
Tractive effort (at 85 per cent. boiler pressure)	35,200 lb.
Adhesion weight	54 tons
Weight of engine in working order	97½ ,,
Water capacity of tender	7,000 gal.
Coal ,, ,, ,,	9¾ tons
Weight of tender, full	69 tons
Total weight of engine and tender in working order	166½ tons
Wheelbase of engine, rigid	14 ft. 9½ in.
,, ,, ,, total	39 ft. 3 in.
,, ,, ,, and tender, total	66 ft. 7 in.
Total length over buffers	78 ft. 6 in.

These new locomotives are designed to haul 400 tons at 130 km.p.h. (80 m.p.h.) on the level, and 300 tons at 95 km.p.h. (59 m.p.h.) up a gradient of 1 in 200. The design also enables them to traverse 459-ft. curves. The boiler is pitched 10 ft. 2 in. above rail level, and is fitted with a feed-water purifier, mud collector, and two mud drain valves. The feed is by one Friedmann type live steam injector and also by a Knorr type feed-water heater and pump. The inside firebox is of copper, as are also the side stays, but those in the breaking zone are of mangan copper. The superheater is of the Schmidt pattern with 35 superheater elements, with saturated and superheated steam chambers made from cast steel and separately mounted.

There are two Ackerman type safety valves, two Klinger type water gauges, and the usual steam pressure gauges. Operation of the firedoor is by compressed air or by hand. Reducing valves of the Friedmann-Duplex type are fitted to the steam heating equipment.

The engine has cast steel bar frames 3 $\frac{3}{16}$ in. thick reinforced by steel castings and plates. A side play of 3¼ in., controlled by volute springs, is provided for the trailing axle. All springs are over the axleboxes, and those of the coupled and trailing axles are compensated. Cylinder relief valves, drain cocks and automatic bye-pass valves of the Melin type are fitted. The connecting and coupling rods are of special steel with solid ends and fitted with whitemetal-lined bronze bearings. The valve gear is of the Walschaerts type, and the link and reversing spindles are fitted with SKF ball and roller bearings. The motion is equipped for oil lubrication, and the cylinders and the engine axleboxes are lubricated from lubricators of the Friedmann type. The sanding gear is of the pneumatic type fitted so as to supply sand in front of the coupled wheels only. An A.E.G. turbo-generator is installed for electrically lighting the engine, which is also fitted with a recording speed indicator of the Hydrometer Perfekt type.

Westinghouse brake is used on the locomotive, and brake blocks are applied to the coupled and bogie wheels, and to the tender wheels ; the brake rigging is fitted with a brake regulator of the Skoda type. The tender bogies are of cast steel, and are mounted on transverse flat springs in the swing bolster and volute springs at each axle.



One of the tender bogies with cast steel frames

XUM

RAILWAY BRIDGES OVER THE ALBERT CANAL IN BELGIUM

Some notes on the large single-span railway bridges of the Vierendeel and lattice girder type, built by the Belgian National Railways over the new Albert Canal

By LIONEL WIENER

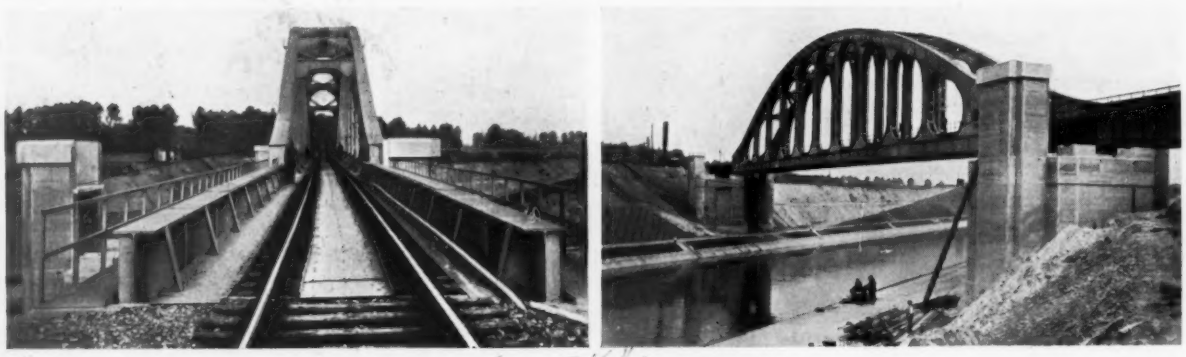
Herenthals-Oolen bridge over Albert Canal, Belgian National Railways

THE article in THE RAILWAY GAZETTE of March 8 (page 335) describing further failures of welded Vierendeel type bridges over the Albert Canal in Belgium has aroused considerable interest. The particular bridges which failed during the recent spell of extremely cold weather, like that at Hasselt which collapsed on March 14, 1938, each carried a road and a single light railway track, and should not be confused with the purely rail bridges of the Belgian National Railways over the Albert Canal.

Altogether the Belgian National Railways have built eight bridges over the Albert and Campine Canals, the larger having Vierendeel girder spans, with parabolic top cords and a theoretical height one-seventh of the length of the girder. The largest of these bridges is that at Gellik, over the Albert Canal, which has a central Vierendeel girder 112·75 m. (370 ft.) long. This is the longest Vierendeel girder bridge so far erected, and it carries a single railway line. It has a riveted structure with welded plate girder approach spans at each end, as shown in the illustration. Another illustration shows the latest girder type bridge over the canal at Herenthals-Oolen, with a span of 89·54 m. (293 ft. 10 in.).

There has been no sign of any trouble with any of these railway bridges, either of the welded or of the riveted portions of the structures, or whether they be of Vierendeel or lattice girder design. The Belgian National Railways have adopted a very cautious attitude in regard to welding, and hitherto have generally adopted it only where it could be undertaken in the workshops and only for plate girders, riveting having been applied for erection in the field. The administration has been adopting welding on a much more extensive scale, for other structures such as station and platform roofs, signal gantries, and rolling stock, but only after very careful preparation and under stringent controls.

Note: As will be gathered, the foregoing was written before the invasion of Belgium which began on May 10, and it is probable that the bridges mentioned have since been demolished in the course of military operations.—ED., R.G.



Gellik bridge over Albert Canal, Belgian National Railways. The main Vierendeel span is riveted and the approach plate girder spans welded

Wastepaper receptacles are being provided at all passenger stations

Collection of waste receptacles and other refuse for sorting prior to disposal

Sorting waste material at a central depot prior to disposal

Goods station decks and warehouse floors are swept at intervals throughout the day and the collection bagged

A bin of 6,000 bottles at a Midlands collecting point. Empty bottles are stored until in sufficient bulk for sale

THE L.M.S.R. SALVAGE CAMPAIGN

Railways and the War—22

Left: The Norddal bridge between Hundalen and Björnfjell on the Norwegian section of the Lapland iron ore railway, near the Swedish frontier. This railway, which was described in THE RAILWAY GAZETTE *of April 19, page 571, connects the iron ore mines of Kiruna and Gällivare in Sweden to the Arctic port of Narvik, taken from the Germans by the Allies last week. Before its capture, Narvik was the scene of much destruction to the port and railway equipment, the Germans having demolished the ore jetties, the power signalling installation, seven main-line electric locomotives, and much of the railway to the frontier. Subsequent German bombing raids are reported to have set the town on fire*

Right: Scene at an English railway station last week, typical of many thousands of similar incidents throughout the country, showing hot food and drink being supplied to British and French troops evacuated from Flanders. The remarkable emergency railway organisation which effected the distribution of these men from south-eastern ports throughout the country is outlined in "Transport Services and the War," at page 810

RAILWAY NEWS SECTION

PERSONAL

AIRCRAFT PRODUCTION

The Minister of Aircraft Production announced on June 4 that Mr. Allan S. Quartermaine, Chief Engineer of the Great Western Railway, has been appointed Director-General of Aircraft Production Factories in the Ministry of Aircraft Production. He will co-ordinate and superintend the relative priority and progress of work in connection with the erection and equipment of factories for the construction of airframes, aero engines, and components.

Mr. Arthur R. Cooper, formerly Chief Engineer, London Passenger Transport Board, who was appointed Director of Air Ministry Factories by Sir Kingsley Wood, will continue to serve in that capacity.

Mr. T. C. L. Westbrook has been appointed to take control of all aircraft purchases from Canada and the U.S.A. Mr. Westbrook resigned from the general managership of Vickers-Armstrongs Limited in April, and on May 18 was appointed Director of the Aircraft Civil Repair Organisation under the Ministry of Aircraft Production.

Sir Frank Edward Smith has been appointed Controller of Telecommunications Equipment. He has full authority.

G.W.R. ACTING CHIEF ENGINEER

During the absence of Mr. A. S. Quartermaine, whose services have been loaned to Lord Beaverbrook, Ministry of Aircraft Production, at the request of the Government, Mr. R. Carpmael, who retired from the position of Chief Engineer, G.W.R., on December 31, has been appointed Acting Chief Engineer from June 5.

MR. F. R. POTTER

Mr. F. R. Potter, Superintendent of the Line, Great Western Railway, who has been seriously ill since May 18, is making satisfactory progress towards recovery.

Sir Edwin Forsyth Stockton has left estate valued at £25,343 (net personalty nil). Sir Edwin, whose death we recorded in our issue of December 8 last, was for some time a Director of the London Midland & Scottish Railway, and prior to grouping a Director of the Lancashire & Yorkshire Railway. At the time of his death he was a Director of the Manchester Ship Canal.

Mr. Allan S. Quartermaine, M.C., B.Sc., M.Inst.C.E., Chief Engineer, Great Western Railway, who, as announced above, has been appointed Director-General of Aircraft Production Factories in the Ministry of Aircraft Production, is an honours graduate of London University and a Fellow and Chadwick Scholar of University College. After a period of training in the Hertfordshire County Surveyor's Office and at the Tees Side Bridge & Engineering Works, Middlesbrough, he joined the Great Western Railway at Wolverhampton in 1910. In 1914 he was transferred to Paddington, and in 1915 went to Egypt with the 116th Company, R.E. During the war he was on location in Sinai, and subsequently became New Works Engineer on the Palestine Military Railways; he was promoted to the rank of Major, mentioned in despatches, and awarded the Military Cross. In 1920 Mr. Quartermaine was appointed Assistant Divisional Engineer at Gloucester, and returned to Paddington in 1924 as Assistant to the Joint Chief Engineers. He acted as Co-ordinating Officer with the War Office in the formation of the Supplementary Reserve Units of the Royal Engineers, and raised and commanded No. 1 Bridging Company (now the 152nd Railway Construction Company). In 1926 he was appointed Divisional Engineer at Bristol, and in 1929, on Mr. Carpmael's appointment as Chief Engineer, Mr. Quartermaine returned to Paddington as Assistant Chief Engineer (Permanent Way and Docks). Subsequently, in 1933, he became Assistant Chief Engineer, and in 1938 Deputy Chief Engineer. In November, 1939, it was announced that Mr. Quartermaine had been appointed to succeed as Chief Engineer, Mr. Carpmael, who was retiring at the end of December.

Photo.] [*Elliott & Fry*

Mr. Allan S. Quartermaine, M.C., B.Sc., M.Inst.C.E.

Appointed Director-General of Aircraft Production Factories

THE TANK BOARD

A new board set up after consultation between the Secretary of State for War and the Minister of Supply is to be called the Tank Board. Brief details were announced in the House of Commons by Mr. Herbert Morrison, the Minister of Supply, on May 29. The function of the Tank Board is to consider the whole situation regarding the production and design of tanks, and to speed up delivery. Sir Alexander Roger has been appointed Chairman; he is Chairman of British Insulated Cables Limited, a Director of the Midland Bank Limited, and a Director of various industrial undertakings. The other members of the board are: Mr. A. A. M. Durrant, Chief Engineer (Buses & Coaches), London Passenger Transport Board; Mr. H. J. S. Moyses, Managing Director, Birmingham Railway Carriage & Wagon Co. Ltd.; and Mr. G. W. Thomson, Member, General Council, Trades Union Congress. It is announced that further members will be appointed shortly to represent the War Office and the Ministry of Supply.

Major G. R. S. Wilson, R.E., Assistant Inspecting Officer of Railways, Ministry of Transport, was recalled to the Army on the outbreak of war, and is now serving overseas as Assistant Director of Railways, with the rank of Lt.-Colonel. As recorded in our issue of March 1, 1940, Colonel F. A. Pope is Director of Railways. During Colonel Wilson's absence, the Hon. H. T. de Bingham has been appointed a temporary Inspecting Officer to the Railways Section, Ministry of Transport, as recorded in our April 12 issue.

XUM

Mr. A. T. Wilford

Appointed Chief Chemist, London Passenger Transport Board

Mr. A. T. Wilford, who, as announced in our issue of May 10, has been appointed Chief Chemist, London Passenger Transport Board, took his degree at the University of London. He served in the Special Brigade (R.E.) and the Royal Field Artillery during the war of 1914-1919 and, after demobilisation, joined the London General Omnibus Company in 1920 as engineering chemist. He has been responsible for organising and directing the board's laboratory. He is an Associate of the Royal College of Science, an Associate of the Institute of Chemistry, and a Fellow of the Institute of Petroleum.

Mr. P. A. Phillips, who, as announced in our issue of May 10, has been appointed Accounts Officer, London Passenger Transport Board, entered the Accountant's department of the Underground Electric Railways Co. of London Ltd. in 1904. When the Charing Cross, Euston & Hampstead Railway was opened he took charge of the company's accounts books. In 1910 he became Chief Clerk in the Accountant's department of the London Electric Railway Company and, on the establishment of the board in 1933, became Assistant to the Accounts Officer.

Mr. J. W. Carswell, who, as announced in our issue of May 10, has been appointed Second Assistant New Works Engineer, London Transport, was apprenticed to William Cory & Sons in 1911. From 1914 to 1919 he served in India with the 5th East Surrey Regiment and in Persia with the South Persian Rifles. He was with P. & W. Anderson, contractors for public works, from 1920 until 1924, when he joined the London Electric Railway as a technical assistant in the Civil Engineering department. As a Resident Engineer he has been responsible for carrying out many of the board's works, the most important of which was the recent reconstruction of Aldgate East station. In 1940 he was appointed an officer of the board and was made Chief Resident Engineer.

Mr. P. G. James, who, as announced in our issue of May 10, has been appointed Accounts Officer, London Passenger Transport Board, is an incorporated accountant and B. Com. (London). He entered the service of Messrs. Deloitte, Plender, Griffiths & Company in 1927 and was engaged on audits of the board and its predecessors. In 1934 his services were lent to the board for six months for special accountancy work and at the expiration of that period he joined the board's staff in the office of the Assistant to the Comptroller & Accountant. In 1939, he was made an officer and Assistant to the Chief Accountant.

Mr. J. W. Carswell

Appointed Second Assistant, New Works Engineer, London Transport

We regret to record the death on April 22 of Mr. David Anderson Hendrie, formerly Chief Mechanical Engineer of the South African Railways & Harbours. Mr. Hendrie, who was born on May 30, 1861, was the youngest of the six sons of the late Major John Hendrie of Inverness, and was educated at Inverness Royal Academy. At the age of 17 he joined the service of the Highland Railway Company as an engineering pupil at the Lochgorm locomotive works, Inverness, under the supervision of the late Mr. David Jones. Mr. Hendrie remained with the company as draughtsman until 1889, when he was appointed leading draughtsman to Sharp, Stewart & Company, the then well-known locomotive builders of Glasgow. Subsequently he joined Dübs & Company, another leading locomotive builder; both are now incorporated in

Mr. P. A. Phillips

Appointed Accounts Officer, London Passenger Transport Board

Mr. P. G. James

Appointed Accounts Officer, London Passenger Transport Board

The late Mr. D. A. Hendrie

Chief Mechanical Engineer, South African Railways & Harbours, 1910-1922

the North British Locomotive Co. Ltd. In July, 1893, Mr. Hendrie returned to the Highland Railway as Chief Draughtsman at Inverness, and later became Works Manager and Assistant Locomotive Superintendent. It was during this period that the designs were produced of the famous " Jones Goods " engines, the first 4-6-0 locomotives in the country, and the last of which was illustrated, on its withdrawal from service, in THE RAILWAY GAZETTE of May 3, 1940. He left the service of the Highland Railway, after having produced various other highly successful designs, to take up the position of Locomotive Superintendent to the Natal Government Railways, and assumed duty in Durban on January 8, 1903. His selection to fill this position was mainly on account of his experience in designing locomotives for working over mountainous railways, an experience which was to be extended to the African sub-continent to a far greater extent than was foreseen at the time of his appointment. Having early in 1904 placed his first lot of South African engines in service, classed as " Dübs B," he was instructed to design an engine which would run long distances without the necessity of taking water and coal. The result of his efforts was the introduction of the Hendrie " B " tender engine, and so satisfied was the Government therewith that an order was placed for 50 engines, although Mr. Hendrie had advocated only five being placed on order. The engines proved highly satisfactory, and are still to be found on various parts of the South African Railway system. Up to the time of their introduction it took six different engines to haul passenger trains from Durban to the border town of Charlestown. The introduction of the Hendrie " B " engine eliminated the necessity for four of the engines, thus bringing about a considerable saving, besides greatly assisting traffic working. As the years passed Mr. Hendrie designed one class of locomotive after another, and today his engines are rendering useful service in various parts of South Africa. He was the originator of certain detailed improvements in locomotive design among which were the Hendrie steam reversing gear bypass valves the use of which was not confined to locomotives in South Africa but found application on engines designed and built for service in other countries as well. His outstanding ability as a mechanical engineer was not confined to the designing of locomotives, carriages and wagons, for he played a great part in reorganising the various railway workshops throughout the Union, with the result that they are today equipped with the latest type of machines and plant. Mr. Hendrie was appointed Chief Mechanical Engineer of the South African Railways & Harbours from the unification in 1910, and retained this position until proceeding on leave of absence prior to retirement, in the middle of 1922 ; his actual relinquishment of office dated from the beginning of February, 1923. At the time of his retirement it was stated that he had done more to develop 3 ft. 6 in. gauge rolling stock than any other railway engineer in the world.

The Minister of Transport, with the concurrence of the Board of Trade, has appointed Sir Leonard Pearce, C.B.E., D.Sc., M.Inst.C.E., M.I.Mech.E., M.I.E.E. to be an Electricity Commissioner for part-time duties. Sir Leonard Pearce, who is the Engineer-in-Chief of the London Power Company, and who has previously served as an Electricity Commissioner, was for many years the Chief Engineer and Manager of the Electricity Department of the Manchester Corporation.

We regret to record the death on May 29 of Mr. Walter McDermott, for many years Chairman of the Consolidated Mines Selection Co. Ltd. He began his business career at a Yorkshire ironworks in 1870 and in 1889 became a consulting engineer in London. He was a Past President of the Institution of Mining & Metallurgy. Mr. McDermott was a son of the late Mr. Edward McDermott who was the joint founder with Dr. Samuel Smiles of our constituent paper, *The Railway News*, the first issue of which appeared on January 2, 1864. Mr. Edward McDermott himself acted as Editor for many years, and was succeeded in 1903 by two of his sons (the late Messrs. Edward Robert and Frederick McDermott) who were of course brothers of Mr. Walter McDermott. When *The Railway News* was amalgamated with THE RAILWAY GAZETTE on December 6, 1918, Messrs. E. R. and F. McDermott became Consulting Editors of the combined paper. Mr. F. McDermott died on July 21, 1924 (aged 68), and Mr. E. R. McDermott as recently as March 10, 1932 (aged 84), as we recorded at page 439 of our March 18, 1932, issue.

Mr. Arthur Ernest Kirkus, Director of Statistics & Rates, Ministry of Transport, from 1922 to 1938, has been elected a member of Sutton & Cheam Borough Council. A portrait and biography of Mr. Kirkus appeared in our October 28, 1938, issue.

We regret to record the death, on May 17, of Mr. Daniel Willard, Jun., Assistant General Counsel of the Baltimore & Ohio Railroad Company, and son of its President, Mr. Daniel Willard. He was born on February 16, 1894, and joined the first Reserve Officers Training Corps at Ft. Myer, Va., after the entrance of the U.S.A. into the world war. He was assigned to liaison duty with the British and French armies. Mr. Willard entered the service of the Baltimore & Ohio Railroad in January, 1924, as Assistant General Attorney, and was appointed Assistant to General Counsel in January, 1926. When the Railroad Credit Corporation was organised by the railroads, after the rate case in 1931, Mr. Willard was loaned by the B. & O. to be General Counsel of the corporation. Later he also became its Vice-President. This was a temporary organisation formed to marshal and distribute the $75,000,000 proceeds of the rate increase, and when this was completed in 1937, Mr. Willard resumed active work with the Law Department of the B. & O., and was appointed Assistant General Counsel in November of that year.

Mr. Robert Bernays, M.P., formerly Parliamentary Secretary to the Ministry of Transport, has been appointed Deputy Regional Commissioner for the Southern Civil Defence Region in succession to Mr. William Goodenough.

It is reported by Reuters from Paris that no news has been received of Monsieur A. Delfosse, Belgian Minister of Transport & Posts, who is stated to have left Belgium after having helped the departure of civilian refugees. The appointment of M. Delfosse as Minister of Transports & Posts in the Belgian Cabinet was recorded in our issue of January 12.

We regret to record the death on May 30 at the age of 57 of Mr. William Forbes, General Manager of the Cardiff Transport Department. Mr. Forbes was from 1899 to 1906 with the Caledonian Railway Company and gained much experience in all branches of railway administration. In 1909 he went to Aberdeen and in 1920 inaugurated the motorbus system in that city. He was General Manager & Engineer of Aberdeen Corporation Transport for some years. In 1928 he was appointed General Manager of Cardiff Transport Department.

We regret to record the death on May 28 of Mr. George Thomas Sibbering in his 79th year. Mr. Sibbering was at one time Engineer & Signal Superintendent of the Taff Vale Railway and held this position at the time this railway was amalgamated with the Great Western Railway in March, 1922.

It has been announced in *The London Gazette* of May 28 that Major General H. S. Gaskell, retired pay, has been appointed Colonel Commandant, Corps of Royal Engineers, in succession to the late General Sir Bindon Blood.

BRITISH REPRESENTATIVES TO ITALIAN RAILWAY CENTENARY

The celebrations to commemorate the centenary of the Italian railways were held from May 8 to 16 in Rome, Naples, and Florence. The British party consisted of Messrs. R. M. Holland-Martin, Chairman of the Southern Railway ; R. H. Hacker, Continental Superintendent, Southern Railway ; C. M. Turner, General Traffic Manager, Associated British & Irish Railways Inc., New York (representing the L.M.S.R.) ; and E. D. Brant, Assistant Secretary, Railway Research Service (representing the G.W.R.). The members of the party reached England last week

TRANSPORT SERVICES AND THE WAR—41

The railway part in a great achievement—Conveying 320,000 of the evacuated B.E.F. and Allied Forces—Moving school children from the East Coast—Compensation for requisitioned wagons—Workmen's tickets on Sundays—More movement prohibitions

" Wars are not won by evacuations, and we must be very careful not to assign to this deliverance the attributes of a victory " said Mr. Churchill in the House of Commons on Tuesday afternoon, when he gave a crowded House some details of the magnificent achievement involved in the withdrawal of British and French troops from Northern France. Nevertheless, the movement had many aspects which were themselves victories, and it is impossible to pay too high a tribute to the close co-operation of Navy, Army, and Air Force, which secured results far in excess of anything which had seemed possible when the position of the British, French, and Belgian armies, almost surrounded, and with a single line of retreat through the solitary port of Dunkerque, was further imperilled suddenly by the surrender of the King of the Belgians and his army.

Mr. Churchill said that the Navy carried more than 335,000 men, French and British, from Dunkerque; 220 Allied naval and 650 other vessels were engaged, and a notable feature was the valuable voluntary assistance given by large numbers of small-craft owners. When the movement was planned, it was thought in high official circles that perhaps 20,000 or 30,000 men might be re-embarked, and the comparison between such estimates and the actual results is a striking measure of the brilliance of the achievement.

Our military losses, as outlined by Mr. Churchill were 30,000 men killed, wounded, and missing; nearly 1,000 guns; and all our transport and armoured vehicles with the Army in the north of France. Our losses in material, although enormous and serious, are not the enemy's gain, however, for it seems that this orderly retreat included systematic and successful destruction.

The British Railway Part in the Work

In a movement of this size and importance, the work is of course by no means completed when the troops are landed on British shores, and the activities of the British railway companies throughout the whole period constitute a notable and brilliant chapter in their history. In a leader published in *The Times* on June 3 it was remarked that " on this side [of the Channel] the power of improvisation has been no less remarkable. More than a word of admiration is due, not only to the staff work which has directed the miracle, but to the untiring civilian volunteers who have victualled and the railways which have transported the troops—especially the Southern Railway, which has conjured up at short notice a smooth and seemingly endless succession of trains, and has lavished upon the emergency its great and peculiar experience in the handling of masses." At the time the main force of the movement fell on the Southern Railway, what would normally be regarded as heavy extra traffic was already being handled, in accommodating the limited number of troops which it had been decided to withdraw from Flanders, well before the surrender of the King of the Belgians intensified the urgency of the situation. Between May 20 and the early hours of May 27, 55 special troop trains were run from south-eastern ports, and these really constituted part of the evacuation scheme.

The main scheme, however, for which the Southern Railway had received instructions at 5 p.m. on Sunday, May 26, began at dawn on Monday, May 27. The first train left the coast at 7 a.m. and at 4 p.m. on Tuesday, June 4, the scheme ceased to operate. During the whole evacuation no fewer than 620 special trains conveyed 319,116 officers and men. No working notices were issued and the movement was directed by telephone. Moreover, when some of the trains left the south-east coast ports, their destinations were not known and these were settled by the military authorities by the time the trains reached key points.

It fell to the lot of the Southern Railway, by reason of its geographical position, to take the initiative in making these arrangements—as indeed, during the war of 25 years ago, the constituents of what is now the Southern Railway had to handle, for the whole or part of their journey, the vast majority of the British Expeditionary Forces. To provide the necessary rolling stock, a pool was formed by the four main-line railways, who provided 186 trains as follow: G.W.R. 40, L.M.S.R. 44, L.N.E.R. 47, S.R. 55. This pooled rolling stock was worked under a system of a common user. It was decided to avoid London as far as possible, and therefore cross-country routes had to be worked out at short notice, and to accommodate in some cases an intensity of traffic for which they were not designed in peacetime. This resulted in a limited disturbance to normal passenger services, some of which had to be cancelled or diverted. In special cases it was even necessary to turn over for the exclusive use of military traffic particular sections of line and stations, but alternative road transport facilities were arranged for ordinary traffic. The extent and day-to-day intensity of the movement is sufficiently indicated by the following table:—

Date	Number of Trains	Total of Officers and men
Monday, May 20–May 27 (early morning)	55	24,108
Monday, May 27	7	3,386
Tuesday, May 28	31	14,054
Wednesday, May 29	76	38,479
Thursday, May 30...	88	44,938
Friday, May 31	107	56,282
Saturday, June 1	110	59,147
Sunday, June 2	45	25,123
Monday, June 3	51	27,344
Tuesday, June 4	50	26,195
	620	319 056

For the benefit of those statisticians who may find a discrepancy of 60 between the total of these individual figures and the grand total given above, we may say that some 60 men were transferred to ordinary trains.

The distances run by some of these special trains were considerable, even on the lines of the Southern Railway, and of course many were handed over to the other main-line railway companies in order to reach their ultimate destinations. The distribution of the troops, which included many of the French Forces, involved also conveyance for re-embarkation at other ports, as was briefly indicated in a radio announcement on the evening of June 3 when this type of movement had been completed. Thus, although it is not possible in present circumstances to give full details of an outstanding story of successful emergency railway operation on a large scale and in difficult conditions, it is obvious that a very heavy task fell upon the staff of the Southern Railway, which worked admirably under the leadership of its General Manager, Mr. E. J. Missenden. In particular, tribute is due to Mr. H. E. O. Wheeler, Superintendent of Operation, and to Mr. A. Cobb, Locomotive Running Superintendent, whose co-operation was spontaneous and complete. No department of the Southern Railway escaped some share of the work involved, and the outdoor traffic and locomotive staffs in particular were engaged literally night and day, snatching a few hours' sleep as opportunity offered, until the task was completed. The operating difficulties of this evacuation movement were further intensified by the fact that during the same period, some hundreds of special trains for the Naval, Military, and Air Forces were run from various points

of the Southern Railway to other points on the same system or to the lines of other companies. During this period also, ambulance trains were run.

In response to the deserved editorial tribute paid by *The Times* on Monday (mentioned above), Mr. E. J. Missenden wrote the following "Letter to the Editor" which appeared in *The Times* on June 4:—

"On behalf of the Southern Railway, officers and staff, who have been engaged for the past week in the most strenuous task of transporting the B.E.F. and allied troops from their ports of disembarkation, I should like to offer deep appreciation of the tribute paid in today's leading article of *The Times*. The Southern Railway has undertaken many mass movements in its history on occasions both grave and gay, in peace and war; but it has never been prouder to serve than in the present emergency, and in this I speak not only for the administrative staff who had to plan the movement in conjunction with the War Office, but for the supervisory staff and the outdoor railwaymen of every grade. Thousands of these men have worked long hours day and night without losing for a moment that care and accuracy which is the British railway tradition. I would not close this letter without a word for the heroism of many of the Southern Railway marine crews, who in hospital ships and other vessels have taken their part in the evacuation under the most difficult and dangerous conditions, and, in a number of cases, given their lives."

In addition, Mr. Missenden sent the following message of thanks to members of the Southern Railway staff:—

"Now that the task of conveying the B.E.F. on its homeward journey is over, I want to express to you all my unbounded admiration for the way in which this work has been planned and carried out. The long hours and devoted service of thousands of railwaymen and women have enabled this most difficult operation to be brought to a successful conclusion, and I feel sure that every one of you who has taken part in it will always remember it with pride and thankfulness, as I do. Thank you!"

Although the chief burden fell on the Southern Railway, the other main-line railways were also involved at very short notice and played their part with a willingness and efficiency which contributed materially to the success of the whole evacuation scheme.

The Work of the R.E.C.

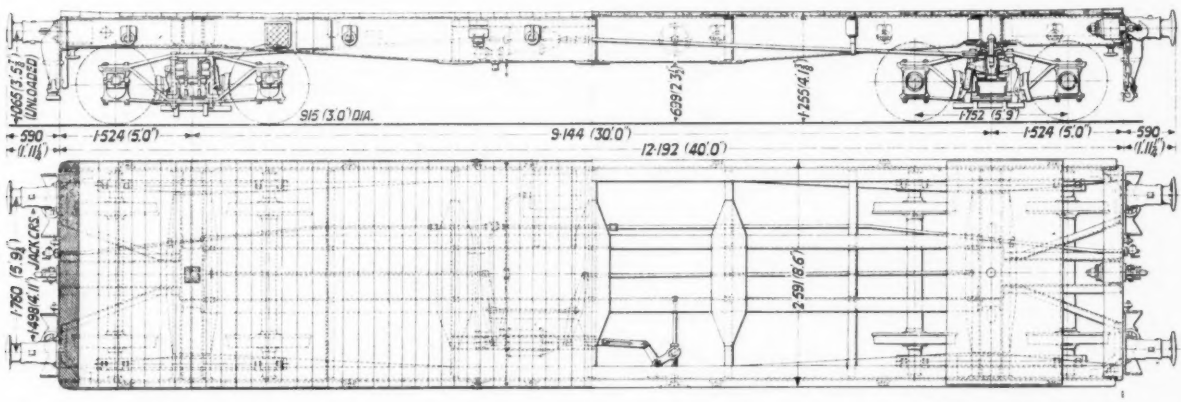
In connection with a movement of this size and importance, it is of interest to outline briefly the respective positions of the Railway Executive Committee and of the individual railway companies in the planning and execution of the services. It is the invariable practice of the Railway Executive Committee to leave all executive matters to the railway company concerned, but if two or more companies are affected by any important move or requirement, the R.E.C. Operating Office, which is manned continuously, keeps close watch on the movement or question involved so that the R.E.C. can be assured that satisfactory arrangements are made and that the work required has been promptly carried out. For example, in the case of ambulance train movements, the War Office makes the request and indicates the time the train will be required, and it is for the Operating Office to arrange for the throughout working in conjunction with the railway companies concerned. Advice is given by each company as to the actual working, and this can be recorded accordingly.

The Operating Office is accommodated at the R.E.C. headquarters and has a staff provided by the four main-line railway companies. The operating organisation is under the control of Mr. V. M. Barrington-Ward as Chairman of the Operating Committee of the R.E.C., and in this respect he functions as a part-time officer of the R.E.C. in addition to his ordinary duties, with the assistance of Mr. L. P. Ball, Assistant Divisional Superintendent, L.M.S.R., Crewe, who is engaged in a whole-time capacity. This arrangement permits of close contact being maintained with the Ministry of Transport and other Government departments and the railway companies, and acts as liaison between the Government department on the one side and the railway companies on the other. Moreover, it accords with the general principle that the R.E.C. Operating Office acts in an administrative capacity only, and leaves the executive work to the individual railway company, no attempt being made to operate the railways from the R.E.C. headquarters.

June L.M.S.R. Train Services

Various alterations and additions to L.M.S.R. train services took effect on June 1. The midnight sleeping car service from Euston to Manchester, hitherto leaving nightly, except Saturdays, at 11.55 p.m., now starts at 12.10 a.m. on Monday mornings, 12.20 a.m. Tuesday to Saturday mornings, and 11.55 p.m. on Saturday nights only. Except on Saturday nights the only intermediate stop is Stockport (183·0 miles non-stop in 3 hr. 42 min.), and the journey is accelerated from 4 hr. 8 min. to 3 hr. 57 min. On Saturday nights the 11.35 p.m. from Euston serves Liverpool only. A first class sleeping car for Preston is run on the 10.50 p.m. from Euston. For the first time since the war began, through coaches are resumed between Colne and other East Lancashire towns and Euston, in the up direction on the express reaching Euston at 1.50 p.m., and in the down on the 2.50 p.m. from Euston. Improvements have been made in the Manchester and Blackpool service, in particular the restoration of the 10.25 a.m. from Manchester (Victoria) to Blackpool and Fleetwood, and the extension from Preston to Blackpool Central of the 12.8 and 9.55 p.m. trains from Manchester; in the opposite direction there are new expresses at 9.10 a.m. and 2.10 p.m. from Blackpool Central to Victoria, and the 7.35 p.m. from Blackpool Central to Preston is extended to Manchester.

On Saturdays from June 15 new through trains for holiday-makers will run in each direction between Chesterfield and Morecambe, Hetley (Sheffield) and Blackpool (*via* Royston,



Elevation, plan, and sections of new tank-carrying flat wagon built in England for the French National Railways. One of these vehicles, designed to carry a load of 45 tons distributed, or 30 tons at any point, was illustrated at page 742 of our May 24 issue

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Thornhill, and the Central Division), Bournemouth and Bradford, Bournemouth and Nottingham, Sheffield and Llandudno, Elmton and Creswell and Blackpool (*via* Mansfield, Pye Bridge, and Ambergate), Rotherham and Blackpool (*via* Sheffield, Dore, and Chinley), and Nottingham and Blackpool (*via* Long Eaton, Chesterfield, and Chinley). The routing of these holiday trains has been ingeniously devised in such a way as to put a very large number of stations in the industrial and mining areas of the Midlands in direct through communication with the coast. The service between Leeds and Bradford and both Morecambe and the Furness line is to be amplified considerably on Saturdays, with new trains from Leeds at 9.37 and 11.10 a.m. and 2.18 p.m. and correspondingly in the opposite direction. On Sundays a number of extra trains are to be run in the Birmingham area, especially between Birmingham, Sutton Coldfield, and Lichfield, Walsall, and Dudley; Walsall and Rugeley; and Birmingham and Evesham; also between Lancaster, Morecambe, and Heysham. In Scotland the Stranraer boat service at 8.5 p.m. from Glasgow (Stranraer Harbour 11.1 p.m.) is restored, as well as the 9.17 p.m. from Stranraer Harbour to Glasgow.

Compensation for Requisitioned Wagons

Terms of compensation have now been arranged for the owners of requisitioned railway wagons. The negotiations leading to the settlement now reached were conducted by a joint committee consisting of representatives of the Association of Private Owners of Railway Rolling Stock, the Mining Association of Great Britain, the Railway Carriage & Wagon Builders' & Financiers' Parliamentary Association, the Wagon Repairing Association, and Wagon Hirers, on the one hand, and the Government and the Railway Executive Committee on the other. The rates of compensation will be as follow:—

For 8-ton and 10-ton wagons, 3s. 3d. a wagon a week.

For 12-ton wagons the compensation varies according to the date of registration of the wagon, and is as follows: 1933 to September 2, 1939, inclusive, 5s. 9d. a wagon a week; 1926 to 1932, inclusive, 5s.; 1919 to 1925, inclusive, 4s. 6d.; 1912 to 1918, inclusive, 4s. 2d.; 1905 to 1911, inclusive, 3s. 9d.; 1904 and earlier, 3s. 8d. New 12-ton wagons registered February 1, 1940, to April 30, 1940, 7s. 3d. a week; November 1, 1939, to January 31, 1940, 6s. 10d.; September 4, 1939, to October 31, 1939, 6s. 2d.

For 13-ton wagons, the same weekly rate as 12-ton wagons.

New 14-ton wagons, registered up to April 30, 1940, 7s. 6d. a week.

For 15-ton wagons, a flat rate increase of 4d. a wagon a week, in all age groups, over the agreed scale for 12-ton wagons.

New 20-ton wagons (excluding hopper type) registered November 1, 1939, to April 30, 1940, 10s. 5d. a week; September 4, 1939, to October 31, 1939, 9s. 9d. a week. For 20-ton wagons (excluding hopper type used in the iron and steel trade), registered before the date of requisition, the following: Registered 1933 to September 2, 1939, 9s. a week; 1926 to 1932, 8s. 6d.; 1919 to 1925, 7s. 9d.; 1918 and earlier, 7s. 3d.

Wagons constructed with specially high sides or with rails for coke traffic, a flat rate addition of 3d. a wagon a week, in all age groups, over the agreed scale for 12-ton wagons.

The general arrangement made with the Ministry of Transport as to repairs provides that the Government will undertake, at its own cost, repairs and maintenance, but no replacement of the wagons requisitioned. There will be no obligation on owners to replace wagons scrapped during the period of requisition; but there will be an obligation on the railways to accept for requisition wagons built by way of replacement on the basis of terms to be agreed. The Government, though taking responsibility for repairs and maintenance, will continue to employ the existing private wagon-repairing facilities for this work, on condition that the decision as to whether repairs shall be done at any particular time and the nature of such repairs will rest with the railways; provided that at the end of the period of requisition no owner will be precluded from making a claim in respect of any repairs and maintenance deferred during the period of requisition. Periodical general overhaul, painting, etc., of requisitioned wagons will be undertaken by the wagon-repairing facilities with the approval of the railway companies. The railway companies will continue to send advices of stoppages of loaded wagons, as formerly, to sending and receiving stations for communication to consignor and consignee. Duplicate specifications of all repairs other than those for out-station repairs will be sent by the repairers to the owners. The railway companies will endeavour to arrange that one-seventh of the requisitioned wagons shall be general-repair plated every year (wherever reasonably practicable at the owner's shop or his normal repairer). The railway companies will endeavour to deal with the requisitioned wagons in respect of repainting and inspection on the same lines as with railway-owned coal wagons.

For requisitioned wagons requiring extensive repairs, the following basis has been agreed as an experimental arrangement to operate until August 31, 1940: When the repair cost (excluding wheels) of a wagon exceeds the amount shown opposite the appropriate category in classes A, B, and C, the case shall be submitted to the railway headquarters, which will then communicate with the owners with a view to mutual agreement as to whether the wagon shall be discarded from the pool or repaired, and in the latter event as to the allocation of the cost of repairs between the owners and the Government. In the event of failure to agree, the case shall be referred for decision to the Technical & Accountants Sub-Committee of the Repairs Sub-Committee:—

A—Wagons built in 1900 and prior thereto (repairs to re-constructed and converted wagons to continue to be governed by Repairs & Rebuilding Regulations), £20.

B—Wagons built 1901 to 1911 inclusive which are not up to 1911 standard, £35.

C—Wagons built 1911 to 1924 (all to the 1911 specification and wagons rebuilt to the 1911 specification, £45.

Wagons coming within the rebuilding clause of the regulations respecting the repairing and rebuilding of wagons must also come within this arrangement for a division of cost. The above arrangement shall not apply to wagons needing repairs as the result of damage.

Workmen's Tickets on Sundays

The Ministry of Transport, on May 31, made the following announcement: The Railway Executive Committee has arranged that, as a wartime emergency measure, workmen's tickets will be issued at any time on Sundays for journeys between places of residence and places of employment to all applicants producing a works pass, shift certificate, or other means of identification associated with the place at which the work is to be performed. These arrangements began on Sunday last, June 2. A similar announcement concerning the railway services, and certain of the road services, of London Transport was made a week earlier, and became effective on May 26 (see our May 31 issue, page 782).

Travel between Great Britain and Ireland

The Home Office announced on June 1 that, in view of the present emergency, the Government has decided that every effort must be made to reduce all forms of unnecessary travel from this country, and in particular that it is necessary to impose further severe restrictions on travel between Great Britain and Eire and between Great Britain and Northern Ireland. In future exit permits for travel from Great Britain to Northern Ireland or to Eire will be granted only to persons who can satisfy the permit authorities that it is necessary for them to travel on business of national importance. No application for an exit permit to travel to Northern Ireland or Eire will be entertained if the object of the journey is for private reasons only. The restrictions will not apply to those classes of persons who are at present exempted from the regulations requiring travellers to be in possession of exit permits.

Prohibition of Holiday Camps in Certain Areas

The Minister of Home Security announced on June 4 that he has made an Order prohibiting holiday camps in certain parts of the country. It prohibits camping in any place within ten miles of the East Coast of England and Scotland, of the South Coast, east of Hengistbury Head, Hampshire, and in the Isle of Wight. It also empowers Chief Constables to prohibit, where necessary, any camp within a mile of Naval, Military or Air Force establishments, aerodromes and aircraft, explosives, and munitions factories. The Order does not affect tents and huts erected by the N.A.A.F.I. and the

Y.M.C.A. in connection with camps authorised by Government departments, and it does not apply to camping by seasonal workers, such as fruit and hop pickers. Persons connected with travelling circuses and fairs may camp within ten miles of the East and South Coasts, but Chief Constables may prohibit them from camping within a mile of Naval, Military, and Air Force establishments.

Further Evacuation of School Children

The evacuation last Sunday (June 2) of school children from East Coast towns to places regarded as less liable to enemy air raids involved the movement of 47,780 children, in 70 trains. Of these trains 32 originated on the Southern Railway, 26 on the L.N.E.R., and 12 on the L.M.S.R. All these trains were received by either the G.W.R. or the L.M.S.R., and the children were dispersed over a wide area in the counties of Nottingham, Derby, Gloucester, Hereford, Stafford, Warwick, Worcester, Monmouth, and Glamorgan. Some 32,500 went from the 18 towns on the coasts of Norfolk, Suffolk, Essex, and Kent, which were recently declared to be evacuation areas. About 6,500 went from the Medway towns, and upwards of 8,000 were removed from the 10-mile coastal belt to which they had been evacuated from London and elsewhere last September. The smaller movement of May 19, involving approximately 8,000, occupied 16 trains.

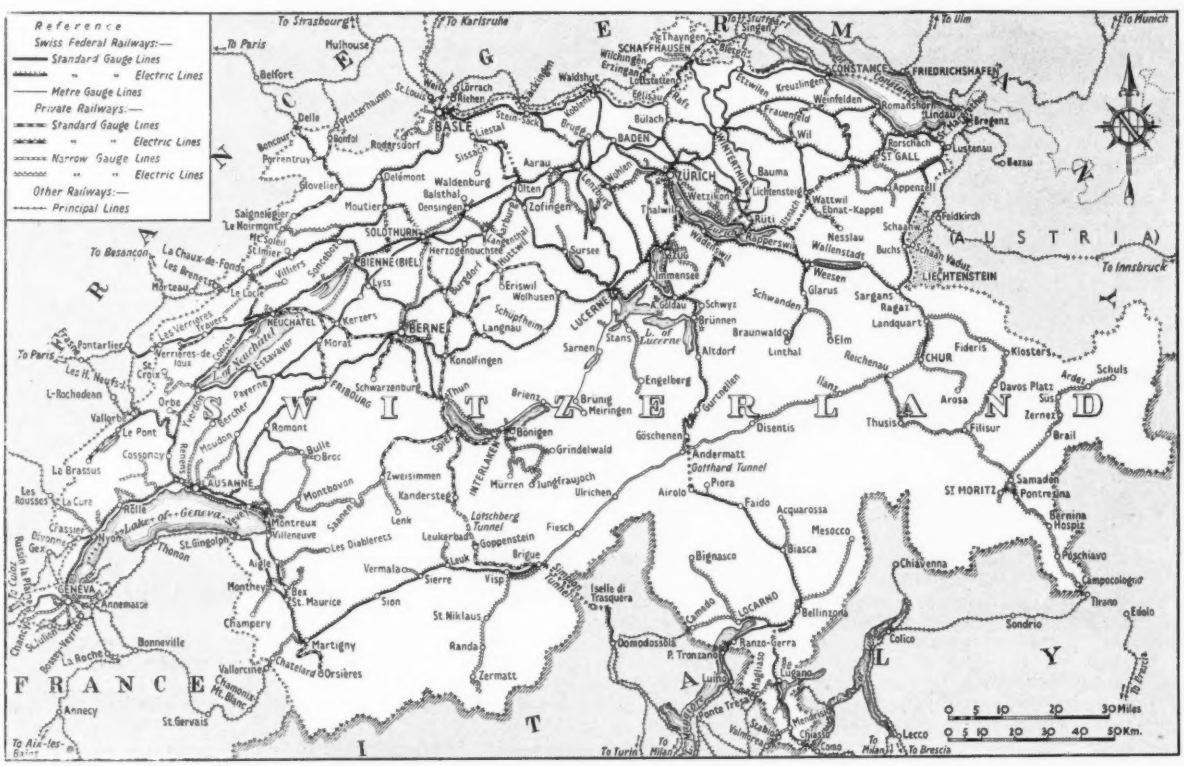
Last War's Badges now Salvage

Included among large quantities of scrap metal recovered by the L.M.S.R. as part of its all-line salvage campaign, are nearly 450 "war service" badges issued to employees of the Lancashire & Yorkshire Railway during the last war. They have been collected in the Bolton district, and will now go into the melting-pot to assist metal production. A series of views depicting some of the salvage methods adopted by the L.M.S.R., through its special Salvage Officer, is reproduced at page 805.

New Finnish Railways

Swedish reports indicate that the Finnish Minister of Communications proposes to complete the rail link to the Arctic port of Petsamo as soon as the railway between Kemijärvi (Finland) and Kandalaksha (Russia) has been completed. It has been stated in more than one press report that the new line to Petsamo will begin at the "railhead" of Rovaniemi, but this seems unlikely as a railway from Kemijärvi to Petsamo and Liinahamari was already in hand before the Soviet invasion of Finland. The Arctic highway extends from Rovaniemi to Petsamo and it seems probable that the railway will adopt the course previously planned from what is actually the railhead, namely, Kemijärvi.

Certain London Transport employees who have been called up are being replaced by women. The first one (shown above) began work on May 31 as a booking clerk at Sloane Square station



The railways of Switzerland

RAILWAY AND OTHER REPORTS

Puerto Cabello & Valencia Railway Co. Ltd.—An interim payment on the 5 per cent. first charge coupon bonds due July 1, 1939, will be made on June 17 next.

India General Navigation & Railway Co. Ltd.—The directors recommend a dividend of 5 per cent. less tax for the year 1939 which compares with 3 per cent. free of tax for 1938. The net profit is returned at £59,051, against £44,980.

Lehigh & Hudson River Railway Company.—Railway operating revenues in 1939 were $1,594,002, an increase of $100,052 on 1938, and total operating expenses advanced only by $43,047 to $1,092,973, so that the operating ratio was reduced from 70·3 per cent. to 68·6 per cent. Net railway operating income amounted to $184,117, an improvement of $55,899, and the gross income of $209,310 was $52,840 higher. Net income after interest and other charges amounted to $205,827, an increase of $50,050.

Long Island Railroad Company.—The report for the year 1939 shows that the average mileage operated was 379, a decrease of 5 miles. Railway operating revenues reached $25,558,212, an increase of $2,250,521 in comparison with 1938. Total operating expenses advanced by $1,327,832, reducing the operating ratio from 76·6 per cent. to 75 per cent. Net railway operating income, at $258,095, compares with a net loss of $217,965 in 1938, and the gross income of $734,249 shows an improvement of $525,972. The net deficit of $1,738,152 in 1939 after interest and other charges compares with a net deficit of $2,209,676 in 1938.

Chicago Great Western Railroad Company.—With an average mileage of 1,505 this company obtained in 1939 railway operating revenues of $18,128,103, an increase of $986,139 in comparison with 1938. Working expenses were reduced by $335,996 to $12,905,666, bringing the operating ratio down from 77·25 per cent. to 71·19 per cent. Net railway operating income amounted to $1,779,770, an increase of $1,186,295, and total income was $1,174,603 higher, at $1,898,239. After providing for rentals, fixed charges, etc., there was a net deficit in 1939 of $62,148, against one of $1,144,273 in 1938.

Wellington Grey & Bruce Railway Company.—Estimated earnings for the half year ending June 30, 1940, applicable to meet interest on the 7 per cent. bonds, will admit of the payment of £4 5s. 5d. on each £100 bond. This payment will be applied as follows: £3 10s. 0d. in full payment of Coupon No. 117 due January 1, 1929, and 15s. 5d. on account of Coupon No. 118 due July 1, 1929, and will be made on and after July 1 next at the offices of the Canadian National Railway Company, Orient House, 52-5, New Broad Street, E.C.2.

Southern San Paulo Railway Co. Ltd.—A payment is announced on the 5 per cent. debenture stock of 1 per cent. actual, less tax, on account of the interest due July 1, 1940. A payment of 2 per cent. on this stock was made on January 1 last.

Cordoba Central Trust Limited.—An interim payment is to be made on June 15 of 1½ per cent., less tax, on the "B" debenture stock in respect of the year to June 30, 1940. This is after payment in full of the interest on the 3½ per cent. first debenture stock. Some £1,820,434 of "B" debenture stock is outstanding. The present title of the company was adopted in May, 1939, after the purchase of the Cordoba Central Railway by the Argentine Government was completed.

Maine Central Railroad Company.—In the year 1939 this company secured railway operating revenues of $11,990,440, which were $871,611 higher than those of 1938. Total operating expenses advanced by only $96,826 to $8,504,984, thus reducing the operating ratio from 75·62 per cent. to 70·93 per cent. The net railway operating income of $2,181,323 showed an improvement of $814,054, and the total income of $2,656,357 was $865,642 higher. Net income after interest and other charges amounted to $573,443, contrasting with a deficit of $302,622 in 1938.

Chicago, Milwaukee, St. Paul & Pacific Railroad Company.—Results for the year 1939 show railway operating revenues of $106,875,380, compared with $99,436,846 in 1938. Total operating expenses advanced from $80,673,187 to $85,511,814, and the operating ratio was reduced from 81·12 per cent. to 80 per cent. Net railway operating income reached $8,124,194, an improvement of $2,849,655, and the total income of $9,556,094 was $3,352,744 higher. Total fixed charges amounted to $14,739,147, and contingent interest charges to $9,143,684, producing a net deficit of $14,427,382, which compares with a net deficit of $17,996,269 in 1938.

Delaware & Hudson Railroad Corporation.—Railway operating revenues in 1939 were $25,460,021, or $4,246,515 higher than in 1938. Total operating expenses advanced by $1,608,284 to $17,597,228 and the operating ratio was brought down from 75·37 per cent. to 69·12 per cent. Net railway operating income, at $5,513,522, showed an improvement of $1,999,532, and the total income of $5,635,106 was $1,924,318 higher. Total deductions from gross income amounted to $4,042,083 leaving net income of $1,593,023, which compares with a net deficit of $156,205 in 1938.

Minneapolis, St. Paul & Sault Ste. Marie Railway.—For the year 1939 income fell $5,632,384 short of meeting fixed charges. In the previous year, the shortage was $6,638,309. Earnings from operations amounted to $15,345,000 compared with $13,692,000 in 1938. Expenses were slightly higher than in 1938, standing at $12,799,000 compared with $12,144,000; and after other adjustments, income, before fixed charges, amounted to $992,970 as compared with $18,404 a year earlier. The deficit at December 31, 1939, is reported at $36,714,000, an increase from $34,123,000 at end of 1938. A credit of $3,259,000, accruals for semi-annual instalments on leased lines, helped to offset part of the 1939 deficit.

Canadian Locomotive Company.—Full 6 per cent. interest on the first mortgage income bonds is to be paid on July 1. This will be the second interest payment on these bonds since they were issued after the 1932 reorganisation. A year ago 6 per cent. was paid from 1938 earnings. The directors state that, although the auditors have certified that no earnings were available from 1939 results for bond interest as defined in the trust deeds, they have decided to make a payment now.

Eastern Counties Omnibus Co. Ltd.—The accounts of this company, which is controlled jointly by the L.N.E.R. and L.M.S.R. companies and by Tilling & British Automobile Traction Limited, for the year ended March 31, 1940, show a profit of £90,460 (against £82,139) to which must be added £31,846 brought forward, making a total of £122,306, against £112,326. The preference dividend again takes £10,000, and the directors recommend a dividend on the ordinary shares of 7 per cent. (tax free) for the year, which will absorb £52,920. They also propose to carry £20,000 (against £10,000) to general reserve, leaving £39,386 to be carried forward. For the previous year the dividend was 8 per cent. Garage and workshop improvements are in progress at Ipswich, Cambridge, and other depots. Further bus businesses have been acquired.

Robert Stephenson & Hawthorns Limited.—The directors recommend a dividend of 4 per cent. for the year 1939, which compares with 3 per cent. for 1938.

Stream-Line Filters Limited.—The directors recommend a final dividend of 7 per cent., making 10 per cent. for the year 1939, which compares with 20 per cent. for 1938. Net profit was £27,343, against £28,755.

W. T. Henley's Telegraph Works Co. Ltd.—The directors recommend a final dividend of 10 per cent., plus bonus of 5 per cent., making 20 per cent. for the year 1939 (same). Net profit was £343,853, which compares with £374,042. There is again transferred to reserve £100,000, and £384,331 is carried forward, which compares with £411,894 brought in.

Results of Indian Pacific Locomotive Report

Abstract of Statement issued by the Railway Board giving details of action being taken upon the report of the Indian Pacific Locomotive Committee

The Government of India, Railway Board, has now published a comprehensive statement showing in detail, item by item, the action that is being taken by it and by railways upon the Pacific Locomotive Committee's recommendations. As many of our readers must have read either the committee's report or the summary of it published in THE RAILWAY GAZETTE on pages 12 to 16 in the issue of July 7, 1939, and also, perhaps, the leading article on pages 4 and 5 of that issue, the following extracts from this statement are given below :—

Modifications in the Bogies.—To comply with the recommendation that bogie spring control should be increased and alterations made, tests are being made with " XA," " XB," and " XC " engines, with varying initial and final spring loadings.

To keep as low and constant a coefficient of friction as possible in the surfaces of the bogie slides, oil-lubricated Ferodo slides have been fitted to the trial engines. Also the bearing area of the slides has been reduced from 220 sq. in. to 156 sq. in. on the " XA " class, and from 294 to 234 sq. in. on the " XB " and " XC " trial engines, in accordance with recommendations. Unlubricated fabric material liners with a coefficient of friction of 0·32 to 0·35 are also being fitted to bogie pivots. Bogie wheel flange thickness has also been increased by $\frac{3}{32}$ in., and the maximum sideplay in the axleboxes has been tentatively fixed at $\frac{1}{2}$ in. A ball and socket arrangement is being provided on the ends of the cradle bars of the " XA " trial engines, and axlebox flanges are being provided with a taper $\frac{3}{32}$ in. on each side ; all these measures and those outlined below are being taken in accordance with the committee's recommendations.

Coupled Wheels.—The maximum sideplay in the coupled wheel axleboxes of engines modified as recommended has tentatively been fixed at $\frac{5}{8}$ in., and axlebox flanges of the trial engines are being provided with a $\frac{3}{32}$-in. taper on each side.

Hind Truck.—Unlubricated flat friction material slides are being fitted to the axleboxes of the trial engines, and lip type brasses to their truck bearings.

One " XA " has been fitted with increased guiding surfaces to the top hind truck slides. The truck axleboxes are not provided with flanges on any " X " type engine, and, as the depth of the top slides is only 4 in., the recommended barrelling of hornchecks is considered unnecessary. Flanges $\frac{3}{32}$-in. thicker are being supplied and $\frac{1}{2}$-in. axlebox sideplay fixed as the tentative maximum on the hind trucks of one " XA," " XB," and " XC " trial engine.

Main Frames.—Angle stiffeners have been fixed to strengthen the stretcher plates between the bogie pin and leading coupled wheels of the trial engines. All " X " class engines are provided with spring compensation, and check tests of weights will be carried out as engines go through shops.

Connection between Engine and Tender.—Instead of Goodall drawgear, pin drawbars and independent side buffers with flat rubbing blocks are being fitted to trial engines. The German buffing gear is being modified as recommended.

Tender.—Bogie centre plates are being provided with friction material liners, and lip type bearings are being fitted to axleboxes of trial engines.

Engine Trials.—Two engines of each of the three classes have been modified as recommended, and flange force tests are being carried out with them. These tests will be repeated from time to time under varying conditions. The appointment of Mechanical Inspectors is under consideration.

Speed Limits and Indicators.—The general speed limit of 45 m.p.h. for all " X " type engines is still in force pending results of flange force tests, except for the " XC " engines on the N.W.R. and B.B. & C.I.R., where conditions are and have been favourable to a maximum of 60 m.p.h. With the concurrence of the Government Inspectors, General Managers, Chief Engineers, and Chief Mechanical Engineers concerned, this maximum is now permitted to continue. Necessary orders are being issued to meet the recommendation that, whilst the Chief Engineer lays down the maximum permissible speeds, the Operating Department, when drawing up the working timetable, should obtain the concurrence of both the Chief Engineer and the Chief Mechanical Engineer to the maximum booked speeds.

It has been accepted that speed indicators should be fitted to both broad and metre gauge mail and express locomotives. To obtain experience with different types of indicator, 135 of various patterns have been ordered for trial purposes.

Various other recommendations are being considered, and the new " WL " Pacifics now under construction incorporate all the committee's recommendations with the exception of underhung springing.

Permanent Way.—The recommended use of rigid sleepers, preferably timber, on black cotton and other weak soils is not altogether in accordance with experience in India. The matter is, however, being referred to the Track Standards Committee. The provision of effective drainage is the first consideration with such soils, and only in very bad cases is blanketting necessary. Many different means have, however, already been experimented with on Indian railways, such as a 1-ft. bed of cinders, a closely-laid bed of sleepers, brick soling, corrugated iron, and lateral pipe drainage.

Research is well advanced to determine the lateral stability of tracks. The principle of providing N + 3 (where N is the number of yards in the rail length) sleepers is accepted for all main lines, with further increases on curves and weak soils.

It is considered by the Chief Engineers in conference that the normal programmes of relaying on most lines will give effect to the recommendation that tracks weaker than 90-lb. F.B. should be replaced by this or heavier standard track within an economically practicable period, wherever the heavier Pacifics run.

Arrangements are being made for an extended use of the Hallade track recorder or similar apparatus, and the track recording car recently introduced is an improvement upon the Hallade system.

The manning standards for main line permanent way gangs are being reconsidered. The previous reductions in gang strengths on the N.W.R. and E.I.R. have now been modified. Central training or group schools for training supervisory permanent-way staff are recommended by the Chief Engineers in conference. Literate gangmen are not yet forthcoming in India.

Further research in addition to the various tests recommended by the Committee is being carried out. Its general scope is outlined in the leading article on page 792 dealing with this subject generally.

Railway Inspectorate and Approval of New Locomotive Types

As already announced in our issue of May 10 last, arrangements are being made to establish a separate Government Inspectors' cadre. It has, moreover, been agreed that the Consulting Engineers should send representatives to India from time to time to discuss important matters on the spot, and also that senior railway officers on leave should call on the Consulting Engineers for discussion.

All Class I administrations can nominate representatives on the Locomotive Standards Committee, and all proposals for new types of locomotive will be submitted to that Committee and to the railway administrations, whose comments and suggestions will be given full consideration.

The Railway Board does not consider it necessary to refer tender documents to the Consulting Engineers for comment before inviting tenders ; diagrams and specifications should preferably be prepared in India. The Consulting Engineers will have ample opportunity for commenting upon detailed designs when working drawings are submitted to them by the builders for approval.

The number of engines of any new type to be ordered will be restricted to two for each railway requiring them, and no repeat orders will be placed until the trial engines have been thoroughly tested and proved satisfactory.

Proposals for strengthening the Central Standards Office are under consideration.

RAILWAY EXHIBITS AT THE WORLD'S FAIR.—Considerable improvements and revisions have been made this year in the presentation of the two principal attractions in the railway exhibit at the New York World's Fair, " Railroads on Parade " and " Railroads in Action," which together attracted over 2,000,000 sightseers in 1939. Other exhibits such as " Building the Railroad," the " Yard," with its historic locomotives and rolling stock, and many others are being repeated in the greatest exhibit in the Fair. The Railroad Building, designed as a roundhouse and occupying 140,000 sq. ft. of space, houses a wealth of historical and other railway features.

XUM

STAFF AND LABOUR MATTERS

Railway Wages

At a meeting held in London on Friday last, May 31, between the Railway Executive Committee and representatives of the National Union of Railwaymen, the Associated Society of Locomotive Engineers & Firemen, and the Railway Clerks' Association, agreement was reached on the claims of the trade unions for an increase in the war advance payable to railway staff. The claims were for an increase of £15 a year for salaried grades and 6s. a week for conciliation staff.

The agreement provides that as from June 3, 1940, the special war advance, payable under the agreements, dated February 9, 1940, to salaried and conciliation staff covered by the national agreements, employed by the railway companies and the London Passenger Transport Board named in the Railway Control Order, dated September 1, 1939, shall be increased to the following amounts :—

(a) Conciliation staff.

Adult males	7/- a week
Junior males	3/6 ,,
Adult females	5/3 ,,
Junior females	2/9 ,,

(b) Salaried staff and staff paid on salary equivalent rates.

	Salaried staff	Staff paid salary equivalent rates
Adult males ...	£18 per annum	7/- a week
Junior males ...	£9 ,, ,,	3/6 ,,
Adult females ...	5/3 a week	5/3 ,,
Junior females ...	2/9 ,,	2/9 ,,

The foregoing amounts are to be taken into consideration in calculating overtime, Sunday duty, and night duty payments, also aggregation allowances, but are not to be taken into consideration in connection with superannuation or pensions. The agreement represents an increase of £8 a year for adult male salaried staff and 3s. a week for adult male conciliation staff with proportionate increases for women and juniors.

Railway Clerks' Association Conference

On the concluding day of the R.C.A. Conference it was decided unanimously to co-operate with the Trades Union Congress and the Labour Party to ensure that railways shall not go back to private control, but be co-ordinated with other transport in accordance with labour policy. Mr. C. N. Gallie said that it is only when a crisis arises that the Government falls back on socialist remedies. Twice the Government had found it necessary to take over the railways—in the great war and now. It would be a serious matter if in any system of co-ordinated transport they were still to allow an important section of that industry to operate a flank attack on the main industry, which was the railways.

Engineering Wages—Women

Under an agreement between the Engineering & Allied Employers Federation and the Transport & General Workers' Union and the National Union of General & Municipal Workers, the national bonus of women workers in the engineering industry will be increased as from May 27 by the following amounts :—

1/- a week to those aged 14 and 15 years.
2/- ,, ,, ,, 16 and 17 years.
3/- ,, ,, ,, 18 years and over.

The agreement only applies to women engaged on work normally performed by women and it does not affect the women who are undertaking war work, replacing men in the industry, the agreement in regard to which was quoted in our issue last week.

Arms Drive

In response to the national appeal by the Minister of Supply for help in the Government's drive for increased arms output a number of skilled workers from the railway engineering workshops have been loaned temporarily to firms engaged in the manufacture of arms. The London Passenger Transport Board has loaned a number of skilled men for aircraft work and the men are evidently as keen as anyone to take their share in the national effort for victory, for there was practically a unanimous response from meetings of the men for voluntary transfer to the work. The following arrangements have been agreed between the board and the unions in connection with the transfer of men :—

In order to meet the request of the Minister for Air Production for the loan of men from the London Passenger Transport Board for the repair of aircraft, it is hereby agreed that :—

1. the rates of pay for men loaned by the board for 47 hours shall be either the rate paid by the board or the rate of the establishment to which the men are sent, whichever is the higher.

2. the rates of pay for time worked over 47 hours shall be the rate paid by the establishment to which the men are loaned.

3. that men loaned will retain all privileges they enjoy in the board's employment.

4. that if any man so loaned requires to live away from his home, a subsistence allowance shall be paid on the basis of that agreed between the London & District Association of the Engineering Employers and the Amalgamated Engineering Unions.

5. That all men loaned will be given absence with leave for the period of the loan and will remain on the board's books.

6.—(*a*) that the appropriate unions shall be notified of the names and grades of men loaned and the places to which such transfer takes them.

(*b*) that all men loaned shall be in grades corresponding to the grades of men asked for by the aircraft company.

(*c*) that all men returning to the board shall return to their present graded positions.

7.—(*a*) that in the circumstances arising from the operation of this transfer scheme under which it may be necessary to fill the place of a craftsman, such place will be filled by a craftsman and not by up-grading of semi-skilled or unskilled men.

(*b*) in the case of the transfer of men involving the necessity to work overtime, such overtime shall not exceed those hours which are the practice of the appropriate union without application to such union for an increase.

(*c*) overtime worked shall not be compulsory.

8. in all cases of transfer

(*a*) there shall be no compulsion.

(*b*) due regard shall be paid to the place of residence of the man concerned and every effort shall be made to transfer him to work near his home.

(*c*) no person shall be transferred to any establishment where a trades dispute is known to be in progress.

9. in order to cover any shortage of skilled men that may arise from these temporary transfers, arrangements may be made by which men of other crafts than those normally employed on the work may be so employed, it being clearly understood that such abrogation of the existing lines of demarcation of work shall be temporary and that the normal working methods shall be resorted to at the earliest possible opportunity.

Note.—The whole of the foregoing shall be subject to any over-riding decision or decisions imposed upon the board or the unions by proper authorities, and subject to further negotiations in the light of unforeseen events.

Holidays in Wartime

An appeal has been made by Mr. Ernest Bevin, Minister of Labour & National Service, to those engaged in industry to cancel holidays for the time being. Mr. Bevin states "I desire to express on behalf of the Government our deep appreciation of the splendid response of all those engaged in industry to the appeal to intensify production. I urge that this great production effort shall be maintained, especially on urgent national production which has priority and that the seven-day week should be continued for a time. In order to maintain health and physical efficiency, my Labour Supply Board is applying its mind to suggestions for organising methods of giving rest periods, and advice on this will be issued as soon as possible. Everyone will, I am sure, understand that in the present grave emergency production must not be interrupted by holiday periods, especially those for several days at a time which are customary in certain parts of the country during the summer months. The Government therefore asks workers and employers to cancel all such holidays for the time being and to await further guidance on the subject, which will be given as soon as the situation permits. Every minute spent on production now is vital to the defence of the country and your homes."

Bus Driver sues London Transport

The non-recognition of the National Passenger Workers' Union by the London Passenger Transport Board was the subject recently of a test action in the Chancery Division on which Mr. Justice Morton delivered a reserved judgment on May 27, dismissing the action. Mr. A. Moscrop, a motorbus driver employed by the London Passenger Transport Board, complained that the board had refused to allow him to be represented, on a disciplinary appeal, by an official of his trade union. In February, 1938, the National Passenger Workers' Union was formed (after the 1937 bus strike), and the plaintiff was one of its earliest members. When in February, 1939, he was

cautioned for an offence, he gave notice of appeal to the divisional superintendent of the board.

The form of notice of appeal contained the following words in print "I am (am not) desirous that a representative of the Transport & General Workers' Union shall accompany." The plaintiff struck out the word "am" and left in the words "am not." He explained in evidence that he did so because he was not a member of the union, and would deal with the matter himself. The divisional superintendent, having inspected the spot where the occurrence took place, affirmed the decision of the depot staff. The plaintiff then decided to appeal to the disciplinary board, and it was clear that on that appeal he wished to be represented by an official of the National Union, of which he was a member. No official of the Transport Union would have accompanied or represented the plaintiff on his appeal, as he was not a member of that union, but, if he had, the board would have allowed such official to represent the plaintiff, and would not have inquired whether he had any right to do so.

Because of the refusal of the board to allow the plaintiff to be represented by an official of his union, the present action was launched and supported by the National Union. The plaintiff, to succeed, must show that the board had imposed a condition on the plaintiff denying him the advantage of being represented by an official of his own trade union; and, secondly, that such a condition was contrary to section 6 of the Trade Disputes & Trade Unions Act, 1927. All that the board had done was to contract with the members of its platform staff that they should have the privilege, on appeals, of being accompanied by an official of the Transport Union. It was true that the officials of that union would not appear for a non-member, or a member who was not in benefit, but that was a matter between the union and the men. That was, however, not imposing a condition that they could not be accompanied by anyone else, such as an official of another trade union.

His Lordship held that no such condition as the plaintiff complained of had been imposed on him. It was the plaintiff who brought about a state of affairs in which the Transport Union would not allow any of its officials to accompany him. The true view was that the plaintiff was seeking to impose a condition on the defendant board that members of the National Union should enjoy the same privilege as members of the Transport Union to be accompanied by an official of their union on any appeal. The question whether that would or would not be a good arrangement did not arise for decision. The plaintiff had failed to establish that the defendant board had imposed on him the condition of which he had complained, and his action must be dismissed.

It was unnecessary to express an opinion on the second point argued—namely, whether, assuming that the board had imposed such a condition, it was rendered unlawful by section 6 of the Trade Disputes & Trade Unions Act, 1927.

International Sleeping Car Share Trust Limited

A circular has been put forward by the directors to the shareholders of the International Sleeping Car Share Trust Limited containing proposals for dealing with the issued capital, which at present is £5,250,000 divided into 5,250,000 shares of £1 each. The assets of the company consist of 30,000 preference shares and 495,000 ordinary shares of Belgian francs 100 each in the Compagnie Internationale des Wagons-Lits et des Grands Express Européens and about £15,000 in net cash. Until recently about 2,627,000 shares of the trust company were held by two Belgian companies representing Italian interests, but after the outbreak of war these shares were acquired by a French group which already owned a substantial interest in the company's share capital. The directors representing the Italian interests resigned from the board. At the request of the French group the directors are putting before the shareholders proposals which would enable the French group in effect to exchange its shares in the company for the group's proportion of the underlying shares in the Wagon-Lits Company, together with a *pro rata* amount of the company's cash.

The directors raised no objection but considered that in fairness the scheme should apply to all holders whose addresses are outside the United Kingdom. The Treasury is prepared to consent and the necessary meetings are called for June 14. Resolutions will be submitted at the meetings for the reduction of the capital by £3,287,805 representing holdings outside the United Kingdom. The intention is that this part of the capital shall be cancelled and that the shareholders concerned shall receive 0·005714 of a preference share and 0·094286 of an ordinary share of the Wagon-Lits Company for each share in the trust company, and in addition 0·66d. a share in cash. The French group will free of charge enable a complete share to be handed over instead of a fraction and will pay the costs of the scheme. United Kingdom shareholders will retain their holdings in the trust company which will then have an issued capital of £1,962,195, and the assets will be 11,213 preference shares and 185,007 ordinary shares of Belgian francs 100 each in the Wagons-Lits Company together with approximately £6,000 in cash.

G.N.R. (IRELAND) SUMMER TRAIN SERVICES—From June 15 to September 21 the Great Northern Railway of Ireland will provide the customary summer through coach workings between Dublin and Portrush, leaving Dublin on the 9 a.m. express, except on certain dates when a special through train will be run in both directions. This service leaves the G.N. main line at Lisburn, and is worked *via* Crumlin to the N.C.C. line at Antrim. On Saturdays an innovation will be a through coach, also on the 9 a.m. from Dublin to Newcastle, *via* Scarva and Banbridge. Through daily facilities will be provided, as usual, between Dublin and Bundoran, at 9 a.m. from Dublin and 3.15 p.m. from Bundoran, on weekdays during July and August.

TRADING WITH NORWAY.—We understand that the trading with the Enemy Branch continues to receive enquiries from the public which suggest that doubts still exist regarding the application to Norway of the Trading with the Enemy Act and the Orders made thereunder. For the purpose of the Act, and of any Orders made thereunder, enemy territory means any area which is under the sovereignty of, or in the occupation of, a Power with whom His Majesty is at war, not being an area in the occupation of His Majesty or of a Power allied with His Majesty. Save exceptionally with the permission of the Trading with the Enemy Branch on behalf of the Treasury and the Board of Trade, no business may be done with persons or concerns in the enemy-occupied part of Norway. In cases of difficulty, traders and others are advised to consult the Trading with the Enemy Branch at Alexandra House, Kingsway, London, W.C.2.

Forthcoming Meetings

June 11 (*Tues*).—**The Antofagasta (Chili) & Bolivia Railway Co. Ltd.** (Ordinary general), Winchester House, Old Broad Street, E.C. at 12 noon.

June 18 (*Tues.*)—**International Sleeping Car Company** (Annual general), 69 Boulevard Haussmann, Paris, at 2 p.m. (adjourned from Brussels by virtue of the decree of February 2, 1940)

Forthcoming Events

June 11 (*Tues.*).—Institution of Civil Engineers, Great George Street, London, S.W.1, 5.30 p.m. Annual general meeting.

June 15 (*Sat.*).—Permanent Way Institution (Manchester-Liverpool), at South port. "Oxygen cutting," by Mr. R. E. Dore.

June 28 (*Fri.*).—Railway Benevolent Institution, at Room C, Euston Station, L.M.S.R., London, 4 p.m. Eighty-second annual meeting.

XUM

NOTES AND NEWS

Airway Companies.—A resolution for the voluntary winding up of British Continental Airways Limited was passed on May 24. Hillman's Airways Limited is also being wound up.

Trent Navigation Company.—This company is applying to the Minister of Transport for an Order under the Special Enactments (Extension of Time) Act, 1940, in respect of the powers conferred by Section 5 (Power to make works) of the Trent Navigation Act, 1932.

Dividend Limitation Bill Withdrawn.—The Chancellor of the Exchequer announced in the House of Commons on June 4 that, as a result of the decision to raise the Excess Profits Tax to 100 per cent., it had been decided not to proceed with the Limitation of Dividends Bill.

The Surrey Border & Camberley Railway.—We understand that the Surrey Border & Camberley Railway Limited, of Farnborough, Hants, is in receivership, and that its miniature railway is closed for the duration of the war. The directors are Messrs. A. D. Kinloch, H. M. Gulland, E. H. Edwards, and D. V. Frank. Mr. Edwards is agent for the receiver. It is hoped to reopen the railway, at any rate in part, after the war, particularly the section between Farnborough Green and Cove Wood. Much of the rolling stock has been disposed of.

Canadian Pacific Earnings.—Gross earnings of the Canadian Pacific Railway for April, 1940, amounted to $12,044,000, an increase of $1,930,000 in comparison with April, 1939. Working expenses totalled $10,098,000, or $897,000 more, leaving net earnings $1,033,000 higher, at $1,946,000. For the first four months of 1940 gross earnings were $47,682,000, an increase of $8,223,000 in comparison with the first four months of 1939, and the net earnings of $7,248,000 showed an advance of $4,867,000.

Canadian National Railways.—Estimates tabled in Ottawa show that the Canadian Government has cut the estimated deficit on the Canadian National Railways from $43,750,000 in 1939 to $15,000,000 in 1940. Colonel Ralston, Dominion Finance Minister, stated that greatly increased business was expected, and operating costs had been cut to the limit.

Canadian Postal Prohibition.—The Post Office Department at Ottawa has issued an order under the Defence of Canada Regulations prohibiting Canadians from dispatching their letters across the border in the U.S.A. It is understood that this step has been taken because of the practice of certain persons resident in Canada of crossing the border into the U.S.A. to mail letters destined for Germany and so circumventing censorship. Similar regulations prohibit correspondence being brought into Canada "on the person of visitors."

City of Buenos Ayres Tramways Co. (1904) Ltd.—The directors have proposed an extension for two years of the moratorium on the annuity payable by the Anglo-Argentine Tramways Co. Ltd. In a circular to 4 per cent. debenture stockholders, the board states it has been informed by Anglo-Argentine Tramways that the expectation that the new transport corporation in Buenos Aires would by this time have been established on a sound footing and paying dividends which would have enabled Anglo-Argentine Tramways to fulfill its obligations has not matured. It is estimated that the transport corporation will not be able to pay any dividends before 1942.

Association of Consulting Engineers.—The annual report records that the membership, despite resignations due directly or indirectly to the war, is the highest (151) in the history of the association. The office was temporarily removed to Cheam but has been reopened at the old address in Westminster, and the monthly meetings have again been held at the Institution of Civil Engineers. The annual dinner, however, which was to have been held on November 28, and for which the then Minister of Transport, Captain Euan Wallace, had accepted the invitation of the association to be the principal guest, was cancelled owing to the outbreak of hostilities.

German Agencies in England.—*The London Gazette* of May 28 contains notices of the voluntary winding up by Resolution of May 21, of the Mitteleuropaisches Reiseburo Limited; and by resolution of May 22, of the Norddeutscher Lloyd General Passenger Agency (Great Britain) Limited.

Irish Traffic Returns

IRELAND		Totals for 21st Week			Totals to Date		
		1940	1939	Inc. or Dec.	1940	1939	Inc. or Dec.
		£	£	£	£	£	£
Belfast & C.D. (80 miles)	pass.	2,902	2,140	+ 762	49,323	38,715	+ 10,608
	goods	499	395	+ 104	10,089	9,055	+ 1,034
	total	3,401	2,535	+ 866	59,412	47,770	+ 11,642
Great Northern (543 miles)	pass.	10,400	10,000	+ 400	213,450	187,800	+ 25,650
	goods	13,500	10,200	+ 3,300	244,650	214,300	+ 30,350
	total	23,900	20,200	+ 3,700	458,100	402,100	+ 56,000
Great Southern (2,076 miles)	pass.	34,296	32,854	+ 1,442	651,047	632,365	+ 18,682
	goods	45,397	38,822	+ 6,575	933,597	872,410	+ 61,187
	total	79,693	71,676	+ 8,017	1,584,644	1,504,775	+ 79,869
L.M.S.R. (N.C.C.) (271 miles)	pass.	4,610	4,250	+ 360	92,980	70,930	+ 22,050
	goods	3,650	3,050	+ 600	73,730	62,190	+ 11,540
	total	8,260	7,300	+ 960	166,710	133,120	+ 33,590

British and Irish Railway Stocks and Shares

Stocks	Highest 1939	Lowest 1939	Prices June 4, 1940	Rise / Fall
G.W.R.				
Cons. Ord.	38	21½	29½	−2
5% Con. Pref. ...	92	71	81½	−7
5% Red. Pref. (1950)	98	83	100½	—
4% Deb.	103	91	96	—
4½% Deb.	105½	93¾	100½	—
4½% Deb.	110	99	102½	—
5% Deb.	121	109½	115½	—
2½% Deb.	63¾	54	59	−3½
5% Rt. Charge ...	117	104	108	−1
5% Cons. Guar. ...	111	96½	103	−4
L.M.S.R.				
Ord.	17	9½	12	−1½
4% Pref. (1923) ...	46½	20	30	−3
4% Pref.	63½	37½	46	−6½
5% Red. Pref. (1955)	83	58½	77½	−5
4% Deb.	98½	85	85	−7
5% Red. Deb. (1952)	109	101¼	105	−1
4% Guar.	87⅞	73	71½	−9
L.N.E.R.				
5% Pref. Ord. ...	5⅜	3⅛	3¼	−¼
Def. Ord.	3½	1⅜	1⅝	−⅛
4% First Pref. ...	38½	19	26	−4
4% Second Pref. ...	15	7⅜	9	−1
5% Red. Pref. (1955)	55	38	52½	—
4% First Guar. ...	78½	60	64½	−5
4% Second Guar. ...	68⅜	47	48½	−9
3% Deb.	71⅛	57	58	−4
4% Deb.	93	76	79½	−3
5% Red. Deb. (1947)	106½	98	100	−½
4½% Sinking Fund Red. Deb.	104½	96	100½	—
SOUTHERN				
Pref. Ord.	78	46½	42½	−8
Def. Ord.	19¼	7	9	−1
5% Pref.	100	76	82½	−6
5% Red. Pref. (1964)	102-7/16	94	100½	—
5% Guar. Pref. ...	116½	103	105	−3
5% Red. Guar. Pref. (1957)	112¾	102⅛	104	−1
4% Deb.	103	91½	93	−3
5% Deb.	118½	109½	115½	—
4% Red. Deb. (1962-67)	106	98	100	—
4% Red. Deb. (1970-80)	102	56	99½	−½
FORTH BRIDGE				
4% Deb.	98 11/16	81	92½	—
4% Guar.	95	80	91	—
L.P.T.B.				
4½% "A"	115	103	105*	−1
5% "A"	123	106½	109*	−2½
4½% "T.F.A." ...	105	100 1/16	102*	—
5% "B"	117½	102	104½*	—
"C"	84	63⅞	35½	−2
MERSEY				
Ord.	24 17/32	17½	23½	—
4% Perp. Deb. ...	93⅜	88¾	91	—
3% Perp. Deb. ...	77	65½	65½	—
3% Perp. Pref. ...	55	49¼	54½	—
IRELAND				
BELFAST & C.D.				
Ord.	6	3	4	—
G. NORTHERN				
Ord.	6	2½	4	—
G. SOUTHERN				
Ord.	13½	8	9½	—
Pref.	26	10	22½	—
Guar.	40½	22	29	—
Deb.	57	45⅜	51½	—

* ex dividend

OFFICIAL NOTICES

Canadian National Railway Company

WELLINGTON GREY & BRUCE RAILWAY COMPANY, 7 PER CENT. BONDS.

NOTICE IS HEREBY GIVEN That the estimated earnings of the Wellington Grey & Bruce Railway Company for the half-year ending 30th June, 1940, applicable to meet interest on the above Bonds, will admit of the payment of £4 5s. 5d. per £100 Bond, and that this payment will be applied as follows, viz.:—£3 10s. 0d. in full payment of Coupon No. 117 due 1st January, 1929; and 15s. 5d. on account of Coupon No. 118 due 1st July, 1929, and will be made on and after 1st July next at the offices of the Canadian National Railway Company, Orient House, 42-5, New Broad Street, London, E.C.2, England.

The coupons must be left three clear days for examination.

A. H. CONEYBEARE,
European Secretary & Treasurer.

London.
4th June, 1940.

Canadian National Railway Company

WELLINGTON GREY & BRUCE RAILWAY COMPANY, 7 PER CENT. BONDS.

AT the semi-annual ballot for May, 1940, the following Wellington Grey & Bruce Railway Company 7 per cent. Bonds were drawn and will be paid at par at the offices of the Canadian National Railway Company in Montreal, Canada, or at Orient House, 42-5, New Broad Street, London, E.C.2, England, on the 1st July next, that is to say, Bonds numbered:—

116, 239, 304, 409, 460, 617, 682, 710, 943, 997, 1366, 1644, 1654, 1731, 2135, 2360, 2563, 2688, 2708, 2777, 2859, 2883, 2997, 3028, 3223, 3275, 3360, 3455, 3475, 3547, 3599, 3624, 3649, 3670, 3791, 3809, 3862, 3869, 4032, 4096, 4188, 4194, 4242, 4267, 4534, 4570, 4582, 4826, 4935, 5068, 5106, 5263, 5278.

In all £5,300 sterling.

Holders of these Bonds will take notice that the interest will cease after 1st July next.

A. H. CONEYBEARE,
European Secretary & Treasurer.

London.
4th June, 1940.

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QUESTIONS IN PARLIAMENT

Discharge of Railway Workers

Mr. T. E. Groves (Stratford—Lab.), on May 30, asked the Minister of Transport if he was aware that a number of workmen were under notice at the Stratford section of the London & North Eastern Railway; and whether, in view of the request of the Government that workers should remain at their posts, he would cause immediate enquiries to be made and ensure that the services of these men were retained and further orders provided for these works.

Mr. F. Montague (Parliamentary Secretary to the Ministry of Transport): I understand that 26 men are being liberated from the boiler shop at Stratford to enable them to take up work of national importance appropriate to their qualifications in outside industry. Ten of these men will take up their new work tomorrow and the others will be released as soon as arrangements for them to commence their new work are completed.

Mr. Groves: Is the Parliamentary Secretary aware that 30 men received their notices today, and, as far as they are aware, there is no further job for them to go to; and is that the new idea of liberation, that they should get the sack?

Mr. Montague: I should imagine that the notices were purely formal. My information is that they have other jobs to go to.

Mr. R. W. Sorensen (West Leyton—Lab.): Is the Parliamentary Secretary aware that many of the men have had no such explanation of those notices?

Mr. Montague: That is the advantage of having the explanation now.

Workmen's Fares on Sundays

Mr. Robert Morrison (Tottenham North—Lab.), on June 4, asked the Minister of Transport whether he would arrange for workmen's fares to be available on Sundays to all workers travelling to and from their employment.

Mr. F. Montague: On the main-line railways, the London Passenger Transport Board's railways, and the board's road services on which workmen's tickets are issued on week-days, the Railway Executive Committee has arranged that, as a wartime emergency measure, workmen's tickets will be issued at any time on Sundays for journeys between places of residence and places of employment, to all applicants producing a works' pass, shift certificate, or other means of identification associated with the place at which the work is to be performed. All Regional Transport Commissioners have been asked to use every endeavour to ensure that arrangements for the issue of workmen's tickets on Sundays on provincial road services are equally wide in scope.

Mr. R. Morrison asked if the arrangement would include men employed in Government Departments in Whitehall, who had to go to work on Sundays.

Mr. Montague replied that he was afraid he could not answer that question without notice, but he should imagine not.

Mr. Morrison asked the Minister to consider whether the arrangement could include those people who were in receipt of very low wages.

CONTRACTS AND TENDERS

The Calcutta Port Commissioners have placed an order with the Hunslet Engine Co. Ltd. for six 0-6-2 side tank type locomotives. The order is to the inspection of Messrs. Rendel, Palmer & Tritton.

The Bengal-Nagpur Railway has placed an order with the Cronite Foundry Co. Ltd. for case-hardening boxes.

The following orders have been placed to the inspection of Messrs. Robt. White & Partners:—

South Indian Railway: 53 locomotive and 54 carriage and wagon tyres: Taylor Bros. & Co. Ltd.

Gondal Railway: 64 helical springs: Crown Spring Co. Ltd.

Jaipur State Railway: 12 vehicle sets of non-shock buffers: A.B.C. Coupler & Engineering Co. Ltd.

Jamnagar & Dwarka Railway: 100 solid drawn steel boiler tubes: Tubes Limited.

Morvi Railway: 5 copper tube plates: Linley & Co. Ltd.

The Buenos Ayres Western Railway has placed an order for spare parts with the North British Locomotive Co. Ltd.

The Bikaner State Railway has placed the following orders, to the inspection of Messrs. Rendel, Palmer & Tritton:—

Robt. Hyde & Son Ltd.: 12 axleboxes for carriages and wagons.

The Patent Shaft & Axletree Co. Ltd.: 345 axles for locomotives, carriages and wagons.

Owen & Dyson Limited: 24 pairs of wheels and axles for carriages and wagons.

Taylor Bros. & Co. Ltd.: 90 high-tensile steel tyres for locomotives.

Talbot-Stead Tube Co. Ltd.: 1,400 steel boiler tubes.

The Bombay, Baroda & Central India Railway has placed the following orders to the inspection of Messrs. Rendel, Palmer & Tritton:—

John Baker & Bessemer Limited: 84 tyres for locomotives.

Linley & Co. Ltd.: 12 copper firebox tube and wrapper plates.

H. J. Skelton & Co. Ltd.: 120 tons of pig iron.

P. & W. MacLellan Limited: 55 tons of pig iron.

The Bengal & North-Western Railway has placed the following order to the inspection of Messrs. Rendel, Palmer & Tritton:—

Atlas Engineering Company One wheel lathe with electrical equipment.

XUM

Railway Stock Market

Business on the Stock Exchange has remained at a low ebb and has continued to be confined largely to gilt-edged securities. Following the announcement that the Limitation of Dividends Bill has been dropped in view of the raising of the Excess Profits Tax to 100 per cent., the undertone of markets became steadier, but there was no appreciable improvement in the volume of business. The fear of damage from aerial attack, and the belief that with E.P.T. at 100 per cent. the financial agreement between the railways and the Government is in effect abrogated, have dominated the trend in home railway securities. There seems every reason to believe that the market is taking an exaggerated view of possible damage from air-raids, but, bearing in mind the very heavy fall in railway securities, it would seem that an authoritative statement should be made as to how the agreement between the railways and the Government is affected by recent developments. Whereas the debenture stocks of many industrial companies whose factories are probably as liable to air-raid damage as the railways, have shown very little movement in price, home railway debentures have again been marked down; there can be little justification for this other than that in times of market uncertainty it is usually the widely-held securities which are the first to be realised.

In view of doubts as to the present position in relation to the agreement with the Government, it is not surprising that junior stocks have declined heavily, although there would seem every reason to believe that, so far as can be judged, they have reached levels which more than discount the adverse factors and uncertainties now attaching to the position and outlook. On the other hand, there is no reason why yields on home railway debentures should be out of line with those of other good class investment securities. It is generally expected that the interim dividend decisions, which fall to be made next month, will be very conservative and that the question of dividends on the junior stocks will, therefore, be left largely until results for the whole year are known and the situation in regard to air-raids can be more clearly assessed.

As compared with a week ago Great Western ordinary stock has declined further from 32 to 29½, while there has been another heavy marking down of the 5 per cent. preference, which is 80½ at the time of writing, compared with 87½ a week ago. Great Western 4 per cent. debentures at 94 were two points down. L.M.S.R. ordinary has moved down from 13½ to 12; the senior preference at 45 showed another substantial fall, the price a week ago having been 52½; the 1923 preference was 30, compared with 32. L.M.S.R. 4 per cent. guaranteed was no better than 71½, and the 5 per cent. debentures were a point lower at 105. Moreover, in the case of the 4 per cent. debentures the price has been marked down from 92½ to 86. Southern preferred has again declined heavily, the current price being 42, or eight points lower on balance; the deferred stock was quoted at 8¾. The 5 per cent. preference has moved down from 87½ to 82, while the 4 per cent. debentures at 93 showed a loss of three points.

L.N.E.R. issues also reflected the general trend; whereas the second preference at 9 was a point lower on the week, the first preference was four points lower at 25½. The first guaranteed at 63½ recorded a further heavy decline, as did the second guaranteed at 48½. L.N.E.R. 3 per cent. debentures were no better than 58, and the 4 per cent. debentures were 79½. London Transport "C" was one of the few railway stocks which changed hands around the same level as a week ago.

Foreign railway securities were lower on balance, and there has been a heavy fall in French railway sterling bonds.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1939–40	Week Ending	Traffic for Week: Total this year	Traffic for Week: Inc. or Dec. compared with 1939	No. of Weeks	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1939	Prices: Lowest 1939	Prices: June 4, 1940	Yield % (See Note)
				£	£		£	£	£					
South & Central America	Antofagasta (Chili) & Bolivia	834	26.5.40	16,830	+ 5,770	21	397,300	280,790	+ 116,510	Ord. Stk.	10⅜	4½	6	Nil
	Argentine North Eastern ...	753	25.5.40	ps. 183,300	+ ps. 12,600	48	ps. 7,220,500	ps. 7,521,000	– ps. 300,500	,,	4½	2	3½	Nil
	Bolivar	174	Apl. 1940	4,650	+ 1,000	17	16,240	15,350	+ 890	6 p.c. Deb.	7½	5¾	7	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds.	5¾	4¼	6	Nil
	Buenos Ayres & Pacific ...	2,801	25.5.40	ps. 1,300,000	– ps. 132,000	48	ps. 65,691,000	ps. 68,507,000	– ps. 2,816,000	Ord. Stk.	5½	2	2½	Nil
	Buenos Aires Central ...	190	20.4.40	$81,400	+ $9,400	43	$4,093,100	$4,271,800	– $178,700	Mt. Deb.	14	8	13½	Nil
	Buenos Ayres Gt. Southern	5,082	25.5.40	ps. 1,755,000	– ps. 353,000	48	ps. 110,644,000	ps. 111,028,000	– ps. 384,000	Ord. Stk.	13⅜	4½	5½	Nil
	Buenos Ayres Western ...	1,930	25.5.40	ps. 645,000	– ps. 165,000	48	ps. 37,146,000	ps. 35,927,000	+ ps. 1,219,000	,,	10¼	4	4½	Nil
	Central Argentine	3,700	25.5.40	ps. 1,717,500	– ps. 389,300	48	ps. 83,252,950	ps. 91,622,900	– ps. 8,369,950	,,	11¼	4	4½	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	4	1½	3	Nil
	Cent. Uruguay of M. Video ...	972	25.5.40	24,009	+ 4,892	48	1,021,610	889,858	+ 131,752	Ord. Stk.	2½	7/8	2	Nil
	Costa Rica	188	Mar. 1940	22,121	– 1,348	40	158,217	200,680	– 42,463	Stk.	24½	18	22	9½
	Dorada	70	Apl. 1940	11,600	– 300	17	46,100	52,300	– 6,200	1 Mt. Db.	104½	102	102½	5½
	Entre Rios	810	25.5.40	ps. 231,400	– ps. 41,200	48	ps. 11,177,400	ps. 12,020,200	– ps 842,800	Ord. Stk.	6	3	2½	Nil
	Great Western of Brazil ...	1,016	25.5.40	6,900	+ 900	21	241,700	204,100	+ 37,600	Ord. Sh.	3/–	1/2½	7/8	Nil
	International of Cl. Amer. ...	794	Apl. 1940	$581,298	+ $46,789	17	$2,343,432	$2,284,653	+ $58,779	—	—	—	—	—
	Interoceanic of Mexico ...	—	—	—	—	—	—	—	—	1st Pref.	7¼d.	7¼d.	¼	Nil
	La Guaira & Caracas	22¼	Apl. 1940	6,040	+ 160	17	28,015	21,700	+ 6,315	Stk.	7	6½	6½	Nil
	Leopoldina	1,918	25.5.40	20,353	+ 5,538	21	458,579	397,571	+ 61,008	Ord. Stk.	2½	½	1½	Nil
	Mexican	483	14.4.40	$284,000	– $65,700	15	$4,631,300	$4,756,900	– $125,600	,,	1⅛	¼	¼	Nil
	Midland of Uruguay	319	Apl. 1940	12,921	+ 6,073	44	106,712	89,923	+ 16,789	,,	2/–	¼	¼	Nil
	Nitrate	386	31.5.40	5,203	+ 2,594	21	75,112	51,279	+ 23,833	Ord. Sh.	2½	1½	2	6½
	Paraguay Central	274	25.5.40	$3,410,000	+ $36,000	48	$150,775,000	$147,762,000	+ $3,013,000	Pr. Li. Stk.	45½	36	40	15
	Peruvian Corporation ...	1,059	Apl. 1940	73,832	+ 12,347	44	680,483	670,650	+ 9,833	Pref.	1⅞	7/8	2	Nil
	Salvador	100	13.4.40	c24,024	+ c4,574	42	c832,101	c882,139	– c50,038	Pr. Li. Db.	19¼	16	15	Nil
	San Paulo	153½	19.5.40	49,298	+ 12,171	20	694,299	610,730	+ 83,569	Ord. Stk.	38	20	31½	7½
	Taltal	160	Apl. 1940	3,085	+ 1,390	44	26,220	29,225	– 3,005	Ord. Sh.	⅝	6/6	11/16	7½
	United of Havana	1,353	25.5.40	23,989	+ 4,400	48	1,164,634	1,131,252	+ 33,382	Ord. Stk.	2	½	½	Nil
	Uruguay Northern	73	Apl. 1940	1,225	+ 492	44	11,226	9,837	+ 1,389	Deb. Stk.	2	2	2	Nil
Canada	Canadian National	23,695	21.5.40	916,243	+ 133,585	20	16,960,847	13,392,373	+ 3,568,274	—	—	—	—	—
	Canadian Northern ...	—	—	—	—	—	—	—	– 4 p.c.	Perp. Dbs.	74¾	60	70	5½
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gar.	100½	76	98½	4⅛
	Canadian Pacific	17,162	21.5.40	578,200	+ 12,000	20	11,384,400	9,501,600	+ 1,882,800	Ord. Stk.	7⅞	3½	5½	Nil
India †	Assam Bengal	1,329	30.4.40	45,187	+ 6,529	4	135,060	120,437	+ 14,623	Ord. Stk.	76½	60	76¼	3½
	Barsi Light	202	20.5.40	3,810	+ 638	7	21,030	16,267	+ 4,763	Ord. Sh.	56½	50¼	42½	8¼
	Bengal & North Western ...	2,096	10.5.40	97,772	+ 9,571	6	375,386	324,278	+ 51,108	Ord. Stk.	277	229½	267	6
	Bengal Dooars & Extension ...	161	10.5.40	4,134	+ 1,657	6	15,159	10,123	+ 5,036	,,	91	84½	215	3
	Bengal-Nagpur	3,267	10.5.40	255,150	+ 21,536	6	1,004,400	930,461	+ 73,939	,,	94¾	83½	94½§	4½
	Bombay, Baroda & Cl. India	2,986	20.5.40	304,350	+ 29,025	7	1,480,275	1,341,675	+ 138,600	,,	108	90	106½	5⅛
	Madras & Southern Mahratta	2,967	30.4.40	197,175	+ 17,883	4	565,725	533,234	+ 32,491	,,	104½	92	99½	7⅛
	Rohilkund & Kumaon ...	571	10.5.40	22,195	+ 4,190	6	88,435	67,076	+ 21,359	,,	280	263	278	5½
	South Indian	2,531¾	10.5.40	124,039	– 71	6	477,227	475,884	+ 1,343	,,	102½	88	87½	5½
Various	Beira	204	Feb. 1940	66,949	—	26	425,917	—	—	—	—	—	—	—
	Egyptian Delta	623	30.4.40	4,904	– 88	4	14,845	15,191	– 346	Prf. Sh.	½	¼	⅜	Nil
	Kenya & Uganda	1,625	—	—	—	—	—	—	—	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B. Deb.	55	39	49½	7⅛
	Midland of W. Australia ...	277	Mar. 1940	12,505	– 4,071	40	115,376	138,753	– 23,377	Inc. Deb.	91½	87½	82½	4½
	Nigerian	1,900	6.4.40	56,690	+ 28,398	1	56,690	28,292	+ 28,398	—	—	—	—	—
	Rhodesia	2,442½	Feb. 1940	355,386	—	26	2,242,412	—	—	—	—	—	—	—
	South Africa	13,288	11.5.40	618,237	– 13,737	6	3,891,911	3,732,019	+ 159,892	—	—	—	—	—
	Victoria	4,774	Feb. 1940	872,466	+ 171,11	35	6,699,801	6,217,729	+ 482,072	—	—	—	—	—

Note. Yields are based on the approximate current prices and are within a fraction of ⅛
Argentine traffics are now given in pesos. † Receipts are calculated @ 1s. 6d. to the rupee § ex dividend